C21.5: 964/3

Vol. 964 Number 3

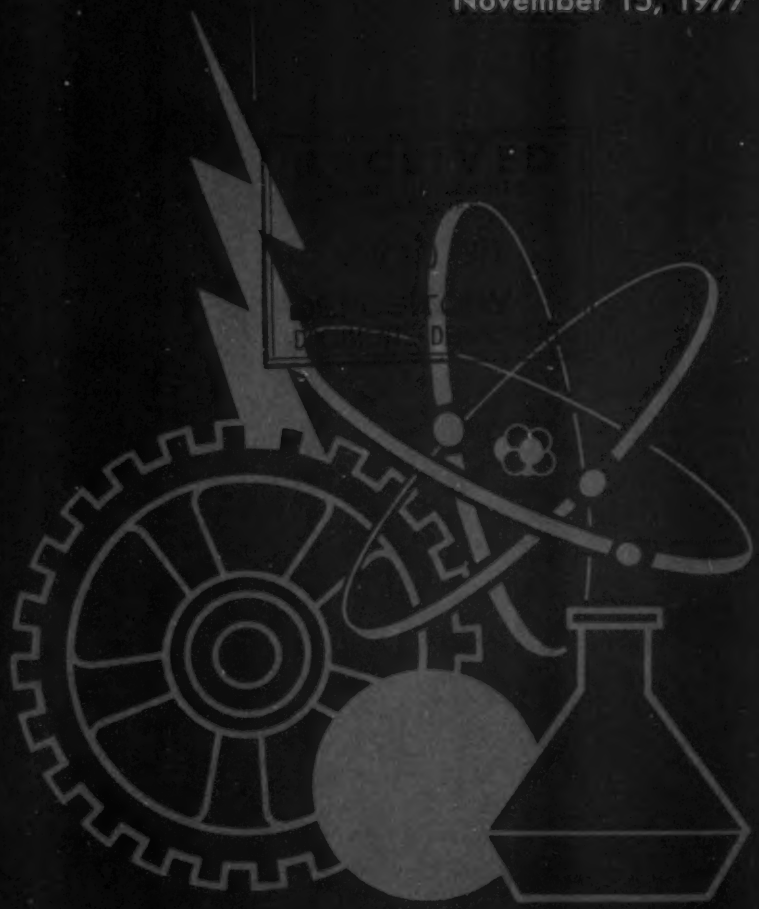
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

November 15, 1977



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

November 15, 1977 Volume 964 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,161,614, Re. S.N. 832,842, Filed Sept. 13, 1977, Cl. 260/46.5, POLYFUNCTIONAL ALKOXY ENDBLOCKED POLYSILOXANES AND THEIR CURED COMPOSITIONS, Paul L. Brown, et al., Owner of Record: *Dow Corning Corporation, Midland, Mich.,* Attorney or Agent: Robert F. Fleming, Jr., et al., Ex. Gp.: 143

3,294,981, Re. S.N. 832,721, Filed Sept. 12, 1977, Cl. 307/237, SIGNAL TRANSLATION EMPLOYING TWO-STATE TECHNIQUES, Amar G. Bose, Owner of Record: *Bose Corporation, Framingham, Mass.,* Attorney or Agent: Charles Hieken, Ex. Gp.: 254

3,906,307, Re. S.N. 834,152, Filed Sept. 16, 1977, Cl. 315/408, CIRCUIT ARRANGEMENT FOR PRODUCING A SAWTOOTH CURRENT THROUGH A LINE DEFLECTION COIL IN AN IMAGE DISPLAY APPARATUS, Johannes Simon Albert Van Hattum, Owner of Record: *U.S. Philips Corporation, New York, N.Y.,* Attorney or Agent: Frank R. Trifari, Ex. Gp.: 222

3,908,791, Re. S.N. 834,153, Filed Sept. 16, 1977, Cl. 182/8, SAFETY CLAMP, Richard A. Kleine, et al., Owner of Record: *Unarco Industries, Inc., Chicago, Ill.,* Attorney or Agent: Benjamin H. Sherman, et al., Ex. Gp.: 353

3,925,679, Re. S.N. 835,561, Filed Sept. 22, 1977, Cl. 290/1, MODULAR OPERATION CENTERS AND METHODS OF BUILDING SAME FOR USE IN ELECTRIC POWER GENERATING PLANTS AND OTHER INDUSTRIAL AND COMMERCIAL PLANTS, PROCESSES AND SYSTEMS, Paul A. Berman, et al., Owner of Record: *Westinghouse Electric Corporation, Pittsburgh, Pa.,* Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 217

3,925,679, Re. S.N. 835,569, Filed Sept. 22, 1977, Cl. 290/1, MODULAR OPERATING CENTERS AND METHODS OF BUILDING SAME FOR USE IN ELECTRIC POWER GENERATING PLANTS AND OTHER INDUSTRIAL AND COMMERCIAL PLANTS, PROCESSES AND SYSTEMS, Paul A. Berman, et al., Owner of Record: *Westinghouse Electric Corporation, Pittsburgh, Pa.,* Attorney or Agent: C. F. Renz, et al., Ex. Gp.: 217

3,992,305, Re. S.N. 835,937, Filed Sept. 22, 1977, Cl. 352/14, SHUTTLE SPEED CONTROL DEVICE, Yukio Katahira, Owner of Record: *Nihon Beru-Haueru Kabushiki Kaisha (Bell and Howell Japan, Ltd.), Higashimurayama, Japan,* Attorney or Agent: Aaron Passman, et al., Ex. Gp.: 211

PATENT NOTICES

Certificates of Correction for the Week of Nov. 15, 1977

Re. 29,350	4,013,590	4,028,664	4,038,226
D. 244,039	4,014,396	4,029,294	4,038,245
D. 244,040	4,015,180	4,029,477	4,038,559
D. 245,160	4,016,157	4,029,763	4,038,754
D. 245,166	4,016,162	4,029,766	4,038,778
3,566,073	4,017,591	4,030,005	4,038,894
3,809,826	4,018,149	4,030,273	4,039,224
3,836,344	4,018,813	4,030,423	4,039,470
3,840,411	4,018,863	4,030,503	4,039,591
3,854,919	4,019,333	4,030,508	4,039,718
3,855,297	4,019,352	4,030,774	4,039,855
3,864,469	4,020,289	4,030,840	4,039,932
3,874,941	4,020,363	4,030,870	4,040,062
3,925,383	4,020,420	4,031,038	4,040,284
3,933,795	4,021,229	4,031,088	4,040,393
3,933,892	4,021,445	4,031,187	4,040,554
3,935,787	4,022,157	4,031,324	4,040,592
3,939,635	4,022,376	4,032,044	4,040,701
3,944,531	4,022,642	4,032,443	4,040,924
3,947,473	4,022,771	4,032,787	4,041,096
3,948,904	4,023,160	4,032,848	4,041,194
3,952,164	4,023,373	4,032,908	4,041,198
3,956,626	4,023,620	4,032,992	4,041,286
3,956,876	4,024,132	4,033,415	4,041,365
3,960,789	4,024,277	4,033,443	4,041,632
3,961,383	4,024,408	4,033,475	4,041,703
3,965,550	4,024,415	4,033,736	4,041,712
3,969,945	4,024,517	4,033,789	4,041,927
3,974,192	4,024,838	4,033,868	4,041,953
3,975,426	4,025,333	4,034,022	4,042,030
3,982,003	4,025,510	4,034,038	4,042,101
3,982,592	4,025,842	4,034,784	4,042,479
3,985,791	4,026,347	4,035,094	4,042,511
3,988,301	4,026,539	4,035,111	4,042,514
3,989,692	4,026,785	4,035,194	4,043,085
3,994,294	4,026,913	4,035,443	4,043,251
4,000,292	4,026,937	4,035,828	4,043,628
4,004,932	4,027,057	4,036,169	4,046,920
4,005,565	4,027,209	4,036,289	
4,005,802	4,027,410	4,036,931	
4,007,220	4,028,485	4,037,211	
4,007,303	4,028,542	4,037,609	

Disclaimers

3,198,043.—*Paul K. Davis,* Alameda, Calif. PIPE CUTTING AND HANDLING APPARATUS. Patent dated Aug. 3, 1965. Disclaimer filed Aug. 22, 1977, by the assignee, *Pacific Roller Die Co., Inc.*

Hereby enters this disclaimer to claim 12 of said patent.

3,381,504.—*Thomas R. Smith,* Newton, Iowa. OSCILLATABLE AGITATOR FOR A LAUNDRY MACHINE. Patent dated May 7, 1968. Disclaimer filed Aug. 15, 1977, by the assignee, *The Maytag Company.*

Hereby enters this disclaimer to all the claims of said patent.

3,565,118.—*Thronton Stearns,* Winchester, Mass. THERMAL INSULATION FOR FLUID STORAGE CONTAINERS. Patent dated Feb. 23, 1971. Disclaimer filed Sept. 9, 1977, by the assignee, *Vacuum Barrier Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,859,522.—*Robert M. Cuthbert,* Delta, British Columbia, Canada. METHOD FOR NON-DESTRUCTIVE TESTING OF FISH FOR SEX. Patent dated Jan. 7, 1975. Disclaimer filed June 30, 1977, by the assignee, *British Columbia Research Council.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,860,443.—*Walter L. Lachman,* Concord, Mass., *Robert A. Penty,* Kennebunk, Maine, and *Paul F. Jahn,* Chelmsford, Mass. GRAPHITE COMPOSITE. Patent dated Jan. 14, 1974. Disclaimer filed June 24, 1977, by the assignee, *Fiber Materials, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,864,649.—*Richard C. Doyle,* Benicia, Calif. ELECTRICAL SAFETY DEVICE WITH IMPROVED TRIP MECHANISM. Patent dated Feb. 4, 1975. Disclaimer filed Sept. 9, 1977, by the assignee, *Minnesota Mining and Manufacturing Company.*

Hereby enters this disclaimer to the remaining term of said patent.

4,030,548.—*Edwin A. Richardson,* Houston, and *Ronald F. Scheuerman,* Bellaire, Tex. ECONOMICALLY DISSOLVING BARIUM SULFATE SCALE WITH A CHELATING AGENT. Patent dated June 21, 1977. Disclaimer filed Sept. 16, 1977, by the assignee *Shell Oil Company.*

Hereby enters this disclaimer to all of the claims of said patent.

Dedication

3,939,614.—*Cyril P. Frommelt* and *Sylvan J. Frommelt,* Dubuque, Iowa. LOADING DOCK SEAL. Patent dated Feb. 24, 1976. Dedication filed Sept. 15, 1977, by the assignee, *Dubuque Awning & Tent Company.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimer and Dedication

3,580,748.—*William T. Delong,* Manchester Township, York County, Pa. WELDING FLUX COMPONENT. Patent dated May 25, 1971. Disclaimer and Dedication filed Sept. 12, 1977, by the assignee, *Teledyne, Inc.*

Hereby disclaims and dedicates to the Public all claims of said patent.

Acceptable Drawings for Patents

Approximately ten years ago, the Office's standards for acceptable drawings with respect to certain matters including the blackness and minimum thickness of inked lines, and shading of drawings, were relaxed in order to reduce the backlog of informal drawings at that time.

Apparently, because of the increased use of pens with a round, open-end capillary tip in place of the conventional draftsman's drawing pen, the Office now has a problem of obtaining acceptable reproduction copies of thin, light and gray lines which appear on many drawings. As a result, approximately 10,000 drawings sheets filed each year are *not* acceptable for normal reproduction and microfilming from the printed copy. Special printing steps must be taken to try to print very thin or light lines. Inked lines should be at least 0.012 inch in width and no closer together than 0.05 inch. Shading lines should be constructed to meet these criteria for acceptable drawings. The inked lines must not rub off the standard bristol board sheet, and their reflectance should not exceed 12%.

Applicants and draftsmen are requested not to use thin or light lines on their drawings. In the future, drawing requirements will be more stringent regarding the blackness and minimum thickness of lines to be acceptable. The Chief Draftsman has been instructed to adhere strictly to the above standards and criteria after January 1, 1978 so that special printing requirements can be held to a minimum.

Persons interested in examples of acceptable and unacceptable lines for drawings may obtain one set of "Printed Examples from Unacceptably Inked Drawings" by writing to:

The Chief Draftsman
U.S. Patent and Trademark Office
Washington, D.C. 20231

RICHARD J. SHAKMAN,
Oct. 20, 1977. *Assistant Commissioner for Administration.*

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 8, 1977

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-22-76
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-3-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-1-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-22-76
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-27-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-18-76
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-15-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-7-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	10-12-76
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	7-9-76
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-24-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-1-76
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-17-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-1-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-1-76
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures: Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	2-3-77

Expiration of patents: The patents within the range of numbers indicated below expire during October 1977, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,954,560 to 2,958,080, inclusive
Plant Patents..... Numbers 1,974 to 1,977, inclusive

REISSUES

NOVEMBER 15, 1977

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,471

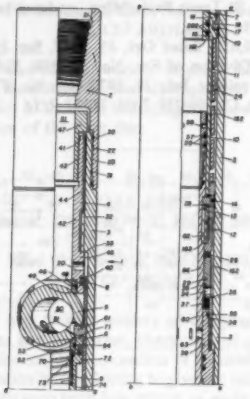
OIL WELL TESTING APPARATUS

Richard L. Giroux, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Original No. 3,814,182, dated June 4, 1974, Ser. No. 340,778, Mar. 13, 1973. Application for reissue June 1, 1976, Ser. No. 691,800

Int. Cl.[2] E21B *41/00*

U.S. Cl. 166—334 **23 Claims**



24. Apparatus for testing the productivity of an oil bearing formation penetrated by a borehole having a testing string therein extending from the surface of the earth to a packer isolating said formation, said apparatus comprising:

housing means having an open bore therethrough;

mandrel means having an open bore therethrough coaxially aligned with and slidably received in the open bore of said housing means, with one of said housing means and said mandrel means being arranged to be connected to that portion of the testing string extending to the surface and the other of said housing means and said mandrel means being arranged to be connected to that portion of the testing string extending to the packer for providing slidable movement of said mandrel means with respect to said housing means between a contracted position and an expanded position during vertical reciprocal movement of said testing string;

a flow tube in the open bore of said housing means having a single end connected to the interior wall of said housing means for providing an open flow path through the open bore of said housing means, said flow path communicating with the open bore of said mandrel means;

valve means in said flow tube movable between an open condition and a closed condition for opening and closing the flow path through said flow tube; and

valve activating means having a portion extending between the interior wall of said housing means and the periphery of the unconnected end of said flow tube, and connecting said mandrel means and said valve means for moving said valve means to the closed condition when said mandrel means and said housing means are in the expanded position and for moving said valve means to the open condition when said mandrel means and said housing means are in the contracted position.

Re. 29,472

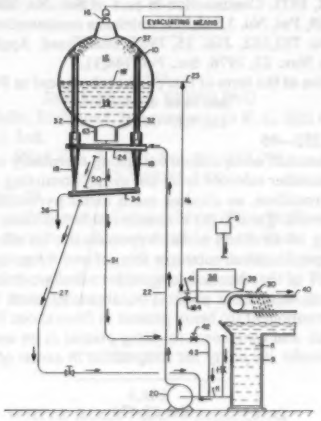
CONDUIT SYSTEM FOR CONVEYING FIBROUS STOCK FROM DEAERATOR CHAMBER TO HEADBOX IN PAPERMAKING MACHINE

Robert G. Kaiser, Seminole, Fla., assignor to Clark & Vicario Corporation, St. Petersburg, Fla.

Original No. 3,812,007, dated May 21, 1974, Ser. No. 184,839, Sept. 29, 1971. Continuation-in-part of Ser. No. 813,646, April 4, 1969, abandoned. Application for reissue May 14, 1976, Ser. No. 686,580

Int. Cl.[2] B01D *19/00*; D21F *1/06*

U.S. Cl. 162—343 **17 Claims**



7. [The papermaking apparatus of claim 1 wherein said dropleg supply conduit means comprises] *In a papermaking apparatus comprising*

papermaking stock receiver means defining an enclosed evacuated chamber having a collecting zone for deaerated aqueous supply stock, and evacuating means associated with said chamber for maintaining its collecting zone under a vacuum sufficient to deaerate aqueous papermaking stock introduced therein,

means for introducing aqueous papermaking stock into the collecting zone of said chamber in a manner facilitating deaeration thereof to produce deaerated supply stock therein,

a papermaking machine including a forming wire for converting deaerated supply stock into a web of paper, and structure associated with said papermaking machine having an interior delivery passage provided with an exit slot for delivery therefrom in the direction of the papermaking machine axis of an effluent jet of stock onto said wire for conversion into a paper web upon removal of liquid therefrom,

the improvement which comprises

dropleg supply conduit means defining a flow course communicating said papermaking machine associated structure delivery passage and its exit slot to a bottom portion of the evacuated chamber collecting zone through which deaerated supply stock can be conveyed from said collecting zone to said papermaking machine and comprising a depending and relatively wide chute of rectangular cross-section having the entry end of its passage in the form of an elongated slot extending along a substantial portion of a major lateral expanse of said collecting zone bottom portion and communicating therewith, the exit end of the passage of said chute being arranged with its transverse width extending in the direction of the transverse length of said exit slot and communi-

cating therewith[.], *the flow course of said conduit means between entry thereto and exit therefrom having no flow course deviation therein extending laterally of the axis of the papermaking machine, said receiver means being elevated above said exit slot a sufficient height to overcome the effect of vacuum on gravity outflow of stock from said receiver means, said distance of elevation being additionally such as to provide a stock pressure head sufficient to overcome flow frictional losses in said supply conduit means flow course and said papermaking machine associated structure delivery passage and its exit slot.*

Re. 29,473

CHEMICAL COMPOSITION

Walter P. Fitzgerald, Jr., San Diego, Calif., assignor to DHP Corporation, Wilmington, Del.

Original No. 3,755,179, dated Aug. 28, 1973, Ser. No. 120,327, Mar. 2, 1971. Continuation-in-part of Ser. No. 828,710, May 28, 1969, Pat. No. 3,640,879, which is a continuation-in-part of Ser. No. 791,512, Jan. 15, 1969, abandoned. Application for reissue Nov. 22, 1976, Ser. No. 744,113

The portion of the term of this patent subsequent to Feb. 8, 1989, has been disclaimed.

Int. Cl.[2] C11D *7/54*

U.S. Cl. 252—95 **4 Claims**

1. A chemical composition consisting essentially of a mixture of (a) a member selected from the group consisting of an alkali metal pyrosulfate, an alkaline earth metal pyrosulfate or mixtures thereof, [and] (b) a member selected from the group consisting of an alkali metal hypochlorite, an alkaline earth metal hypochlorite or mixtures thereof *and (c) an agent rendering the pH of the chemical composition alkaline*, component (a) being present in from about 1 to about 99 parts by weight, [and] component (b) being present in from about 99 to 1 parts by weight, *and component (c) being present in an amount sufficient to render the pH of the composition in excess of 8.*

Re. 29,474

METHOD FOR THE DETERMINATION OF PROTEINS AND POLYPEPTIDES

Rolf E. A. V. Axen, Upplands Balinge; Jerker O. Porath, and Leif Edvin Wide, both of Uppsala, all of Sweden, assignors to Pharmacia AB, Uppsala, Sweden

Original No. 3,555,143, dated Jan. 12, 1971, Ser. No. 643,190, June 2, 1967. Application for reissue July 23, 1975, Ser. No. 598,141

Claims priority, application Sweden, June 2, 1966, 7541/66

Int. Cl.[2] A61K *43/00*

U.S. Cl. 424—1 **23 Claims**

1. A method for the determination of a member selected from the group consisting of proteins and polypeptides in aqueous samples, which comprises contacting particles of water insoluble polymers to which have been bound, by covalent bonds, antibodies against the said member to be determined, with the aqueous sample containing said member and with the same member labelled with a radioactive isotope to bind part of said labelled member and unlabelled member to said antibodies to produce a two-phase system comprising a solid phase comprising said bound part of labelled member and unlabelled member and a liquid phase comprising unbound labelled member and unlabelled member, separating the two phases from each other, and measuring the radioactivity of at least one of the said solid and said liquid phases, the value of said radioactivity being each a function of the concentration of the said member in the aqueous sample.

Re. 29,475

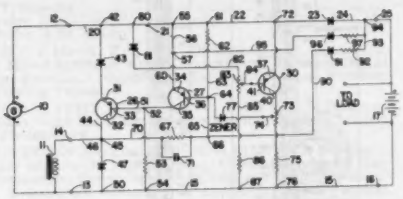
BATTERY CHARGING CIRCUIT RESPONSIVE TO GENERATOR OUTPUT VOLTAGE AND CURRENT

James Lee Jensen, St. Louis Park, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Original No. 3,350,619, dated Oct. 31, 1967, Ser. No. 787,455, Jan. 19, 1959. Division of Ser. No. 640,168, Feb. 14, 1957. Application for reissue July 24, 1972, Ser. No. 274,358

Int. Cl.[2] H02H *7/06*; H02J *7/14*

U.S. Cl. 322—28 **15 Claims**



1. In combination, a power source, a control winding for varying the voltage input of said power source as a function of current flow therethrough, a first transistor having emitter, collector, and base electrodes, a second transistor having emitter, collector, and base electrodes, [and] *an* output circuit energized by said power source, a first circuit connected across the said output circuit including the emitter-collector circuit of said first transistor and said control winding, a second circuit connected across said output circuit including the emitter-collector circuit of said second transistor, means connecting the base electrode of said first transistor with the collector electrode of said second transistor, voltage responsive means connected with said output circuit and the base electrode of said second transistor, and means for causing said first transistor to operate at only two stable conditions of operation, one of which is the substantially fully conductive state and the other of which is the substantially fully non-conductive state, said last named means including a feedback circuit connecting said first circuit and the base circuit of said second transistor.

PLANT PATENTS

GRANTED NOVEMBER 15, 1977

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,148

PEAR TREE

Clifford B. Cordy, Central Point, Oreg., assignor to Naumes of Oregon, Inc., Medford, Oreg.

Filed May 10, 1976, Ser. No. 684,797
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree, substantially as shown and described herein, distinguished by the physical characteristics of the fruit including its shape and overall dark red coloration of the fruit skin.

4,149

OAK TREE

J. Frank Schmidt, III, 19237 NE. Halsey St., Portland, Oreg. 97230

Filed Nov. 4, 1976, Ser. No. 738,666
Int. Cl.[2] A01H *5/12*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of oak tree substantially as herein shown and described, characterized particularly as to novelty by the maroon coloration of its newly formed leaves which coloration is long-lasting to give the entire tree a distinct maroon appearance until late spring or early summer.

4,150

CHERRY TREE

Ralph S. Moore, Visalia, Calif., assignor to L. E. Cooke Co., Visalia, Calif.

Filed Jan. 27, 1977, Ser. No. 763,107
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of fruiting cherry tree of the Bing type, essentially as described and illustrated, of vigorous, upright growth habit with large dark red fruit similar to the Black Tartarian variety but larger and generally having a sweeter more pleasing flavor; a tree which grows and fruits well in warm dry areas such as the south San Joaquin Valley in California and which bears abundant annual crops; the variety is further characterized by the keeping quality of its fruit, by abundant medium green foliage and ease of propagation by regular nursery methods.

4,151

ROSE PLANT SEEDLING

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed Feb. 3, 1977, Ser. No. 765,396
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct red rose cultivar substantially as herein shown and described, characterized by the brilliant red color of its very large blossoms, its vigorous habit of growth, its retention of the good cropping characteristics of its pollen parent, and its improved flower form over that of its seed parent.

4,152

WHITE ROSE PLANT SEEDLING

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed Feb. 3, 1977, Ser. No. 765,397
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—14 **1 Claim**

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by its abundant and continuous production of white blossoms of relative small size but excellent form, borne on long, moderately strong stems, and by its extraordinary vigor for a greenhouse rose.

PATENTS

GRANTED NOVEMBER 15, 1977

ERRATA

For CLASS	See PATENT NO.
407–089	4,057,884
132–112	4,057,901
187–001 R	4,058,191
242–007.22	4,058,278
366–160	4,058,296
366–081	4,058,297
366–076	4,058,298
062–006	4,058,382
062–085	4,058,383
062–457	4,058,384
250–493	4,058,486
424–180	4,058,519
544–165	4,058,523
544–136	4,058,524
544–182	4,058,525
544–182	4,058,526
560–043	4,058,550
560–043	4,058,551
560–052	4,058,552
560–180	4,058,553
560–180	4,058,554
560–191	4,058,555
560–231	4,058,556
424–330	4,058,642
358–260	4,058,674
235–449	4,058,705
235–449	4,058,706
235–448	4,058,707
364–424	4,058,709
364–433	4,058,710
364–101	4,058,711
364–564	4,058,712
364–724	4,058,713
564–754	4,058,714
364–726	4,058,715
364–824	4,058,716
364–824	4,058,717
362–238	4,058,718
362–190	4,058,719
362–082	4,058,720
363–080	4,058,758
364–900	4,058,798
365–014	4,058,799
365–003	4,058,800
365–039	4,058,801
355–014	4,058,815
354–354	4,058,823
361–038	4,058,842

PATENTS

GRANTED NOVEMBER 15, 1977

ERRATA

Pat. CLASS	No. PATENT NO.
427-029	4,057,084
175-172	4,057,901
127-001 R	4,058,191
242-027.22	4,058,273
166-160	4,058,299
166-081	4,058,327
165-075	4,058,294
062-026	4,058,282
062-087	4,058,381
062-427	4,058,384
250-493	4,058,886
424-180	4,058,719
344-165	4,058,714
344-176	4,058,724
344-182	4,058,725
344-182	4,058,726
260-043	4,058,750
560-041	4,058,551
360-072	4,058,373
250-160	4,058,365
250-160	4,058,554
361-177	4,058,477
175-330	4,058,958
175-330	4,058,963
372-100	4,058,974
127-449	4,059,704
127-449	4,059,760
175-474	4,059,707
364-474	4,059,796
364-477	4,059,710
364-101	4,059,711
364-364	4,059,742
364-724	4,059,713
364-724	4,059,715
364-726	4,059,713
364-724	4,059,716
364-724	4,059,717
364-724	4,059,718
343-730	4,059,719
343-082	4,059,730
343-360	4,059,758
364-900	4,059,798
364-914	4,059,799
367-009	4,059,800
364-109	4,059,811
339-014	4,059,813
174-152	4,059,823
361-029	4,059,843

PATENTS

GRANTED NOVEMBER 15, 1977

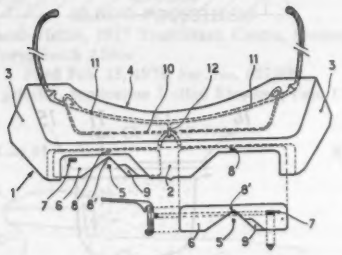
GENERAL AND MECHANICAL

4,057,852

ANTI-DAZZLE EYE SHADE

Claude Contant, 232 Boulevard de la Madeleine, Nice, France (06000)

Filed Feb. 18, 1976, Ser. No. 659,135
Claims priority, application France, Feb. 18, 1975, 75.05892
Int. Cl.[2] A61F *9/00*
U.S. Cl. 2—12 **8 Claims**



1. An anti-dazzle visor to selectively limit the wearer's unobstructed field of view for protection against natural or artificial light rays from outside said limited field of view, comprising a support and adaptation means for adapting said support to the wearer, said support comprising:

a horizontal part with a curved side for adjustment to the wearer's head;

an essentially vertical front part connected at the top thereof to said horizontal part at the side thereof opposite said curved side, said front part being provided at the level of the wearer's eyes with sloping cutouts, said cutouts being held at a distance in front of the eyes determined by the width of said horizontal part;

two parts connected to said horizontal part and said front part at the sides to form blinders at the level of the temples of the wearer;

two notched parts each having a notch widened at the bottom and each being connected to each of a respective one of said sloping cutouts and being rectilinearly slidable in a lateral direction for rectilinar lateral slidability of the notches within said cutouts without producing a gap either at the top or sides of the notched parts, each of said notched parts defining an unobstructed field of view determined by the lateral position of the notch, for a fixed head position, and the distance of the notch from the eye, the greater the distance, the more limited the field of view;

pushbutton means connected to each of said notched parts for allowing easy lateral shifting adjustment thereof within said sloping cutouts; and

marking means on each of said notched parts and on said front part for indicating the relative lateral position of each of said notched parts,

wherein said support is pivotally connected to said adaptation means such that the support, and particularly said front part, may be tilted upwardly and downwardly, and

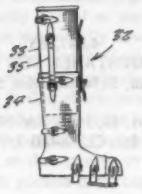
wherein a portion of one side of each of said notched parts adjacent to and on the same side of each notch is made of tinted transparent material to absorb or reduce the intensity of light rays reaching the eye from certain angles outside the desired field of view.

4,057,853

SNAKE LEGGINGS

Larry A. McLane, Rte. 1, Box 49, Amaconda, Mont. 59711

Filed July 1, 1976, Ser. No. 701,570
Int. Cl.[2] A41D *13/00*
U.S. Cl. 2—22 **1 Claim**



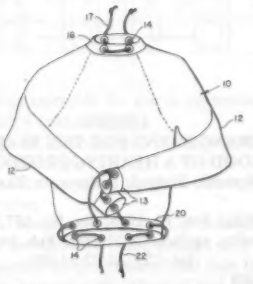
1. A snake legging, comprising in combination, a main body of double layer, close woven, stainless steel mesh, an upper edge of said legging being crimped and embossed, and enclosed within a heavy padding, a vertical side of said legging being split, forming adjacent vertical edgings which are closeable by engaging strips of resilient hooks and loops along each vertical edge and by a plurality of straps, a forward end of a foot portion of said legging comprising a toe cap made of rigid, non-pliable material, an underside of said foot portion being left open and including a plurality of crossing straps between opposite sides of said legging, and which straps extend under a shoe or boot of a wearer, said legging including means for higher or lower protection of a leg, as needed, and comprising said main body being made of an upper and a lower section, which telescopically interfit, and which are securable in selected, extended position by means of vertically interconnecting straps.

4,057,854

CONVERTIBLE GARMENT

John H. Phelps, Sr., Cathlamet, Wash., assignor to George King and Peggy King, both of Bellevue, Wash.

Filed Feb. 7, 1977, Ser. No. 766,343
Int. Cl.[2] A41B *1/10*
U.S. Cl. 2—128 **4 Claims**



1. A garment covertible to a pack comprising:

a garment to be worn on the upper body and having an upper head opening, a waist having a lower opening and a pair of elongated sleeves terminating in wrist ends,

first closure means for said head opening,

second closure means for said waist lower opening,

means for securing said wrist ends of said sleeves to said

waist for converting the garment into a wearable pack supported on the shoulders of the wearer with the arms passing between the sleeves and the remainder of the garment, and means for tightening said first and second closure means to provide a closed storage space within the garment when worn as a pack.

4,057,855

ADJUSTABLE SUN HAT

Karnig Hovhannessian, 5154 Romaine St., Los Angeles, Calif. 90029

Filed Nov. 13, 1975, Ser. No. 631,533
Int. Cl.[2] A42B *1/18*
U.S. Cl. 2—177 **6 Claims**

1. An adjustable sun hat comprising a headband assembly, a central support member carried by said headband assembly and slidably mounted thereon about a first axis, a body portion defining a plurality of radially extended pleats (carried by) is pivotally secured to said central support member such that said body portion can be pivoted upwardly with respect to said central support member to substantially collapse said body portion to facilitate carrying, and means for pivoting said central support member and said body portion with respect to said headband assembly about a second axis, said second axis being substantially perpendicular to said first axis whereby said body portion of said hat can be positioned in any desired angular orientation on the wearer's head to block the sun's rays.

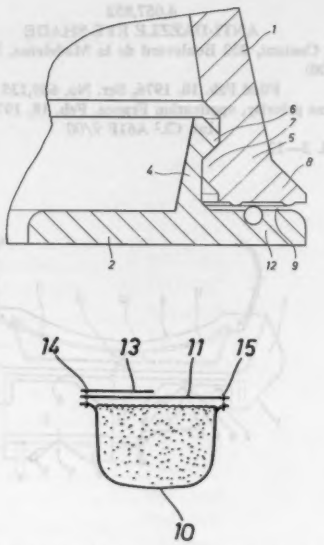
4,057,856

FIXING ARRANGEMENT FOR THE SEALING PAD ON THE EAR HOOD OF A HEARING PROTECTION MEANS

Yrjö Aho, Westend, Finland, assignor to Exel Oy, Helsinki, Finland

Filed Feb. 12, 1976, Ser. No. 657,700
Claims priority, application Finland, Feb. 14, 1975, 750412
Int. Cl.[2] A41D *21/00*
U.S. Cl. 2—209 **3 Claims**

1. An arrangement for fixing a sealing pad to an ear hood of a hearing protection means, comprising an ear hood having an annular marginal surface, an annular washer plate member provided with an outer annular marginal surface for mating engagement with the annular marginal surface of the ear hood, said washer plate member and ear hood being releasably secured to each other and an annular sealing pad provided around its outer edge with an inwardly directed annular skirt portion, said skirt portion being gripped between the mating surfaces of said washer plate member and said ear hood when



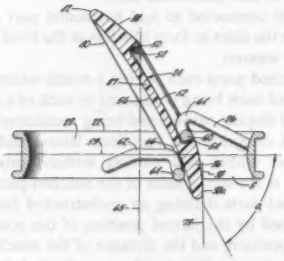
assembled, and said annular sealing pad being supported on said annular washer plate member.

4,057,857

HEART VALVE WITH ARCUATE OCCLUDER

Bruce E. Fettel, Diamond Bar, Calif., assignor to Shiley Laboratories, Inc., Irvine, Calif.

Filed Sept. 8, 1975, Ser. No. 611,273
Int. Cl.[2] A61F *1/22*
U.S. Cl. 3—1.5 **12 Claims**



1. In a heart valve prosthesis having a valve ring, means for securing the valve ring in the place of a natural heart valve, a free floating, rotatable, discoid valve occluder and means for mounting the occluder for repetitive movement between the open and closed positions, the improvement wherein:

the valve occluder is a vane having radial symmetry about a center axis perpendicular to the general plane of the vane, and having a generally arcuate convex distal surface with a distal depression surrounding the center of the vane and having a concave proximal surface which is generally arcuate with a large arc of curvature to define a thin disc with a relatively smooth proximal surface; and

the mounting means comprising opening support structure extending on the distal side of the occluder from the valve ring to the depression in the vane, the inner portion of the

opening support structure extending into the depression to engage therein to control the opening movement of the occluder and to provide a knuckle-like joint between the opening support structure and the occluder during opening; and a closing support structure extending from the ring into the arcuate concavity of the proximal surface to provide a rocker-like contact support surface for the occluder during closure, the contact between the support surface and the occluder moving toward the center during closure said mounting means permitting free rotation of said occluder about its center as the occluder opens and closes.

4,057,858

ELBOW PROSTHESIS

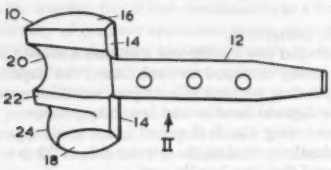
Arthur Jacob Helfet, 1917 Trust Bank Centre, Heerengracht, Cape Town, South Africa

Filed Feb. 13, 1976, Ser. No. 657,939

Claims priority, application United Kingdom, Feb. 17, 1975, 6677/75

Int. Cl.[2] A61F *1/24*

U.S. Cl. 3—1.91 8 Claims



1. A hingeless elbow prosthesis including humeral and ulnar implants, in which the head of the humeral implant has a convex medial condylar formation presenting a smooth curved trochlar groove in the shape of part of a helix and providing a bearing surface for a head of the ulnar implant, and in which the ulnar implant presents a condylar head contoured to fit into the trochlear groove, so that as the ulnar implant pivots around the humeral implant, with the condylar head mating with the trochlear groove, the ulnar implant moves along the pivotal axis and the ulna performs the required valgus in extension and varus in flexion.

4,057,859

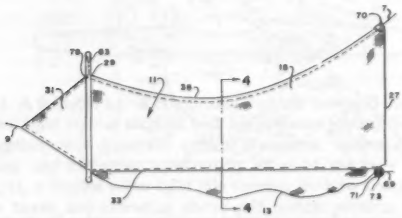
SUSPENDIBLE SLEEPING SURFACE AND TENT

Jeffrey M. Setterholm, 7392 Dale Ave., Apt. 3, Richmond Heights, Mo. 63117

Filed Nov. 11, 1975, Ser. No. 630,800

Int. Cl.[2] A45F *1/60*

U.S. Cl. 5—121 6 Claims



1. A suspendible combination tent and sleeping surface structure for enclosing and supporting an occupant, said structure comprising:

body means for enclosing said occupant, said body means having a generally horizontal longitudinal axis and being formed of a flexible material, a lower web of said body means forming a sleeping surface for said occupant;

transverse compression element means, at the longitudinal ends of said body means, for spreading the lower surface of said body means in a direction transverse of said longitudinal axis; and

suspension means for suspending said body means between fixed tie points and for applying a longitudinal tension to said body part,

said structure being characterized in that when the structure is unoccupied the longitudinal edges of said lower web portion are inwardly bowed as viewed in top plan, the lower web portion is upwardly bowed as viewed in side elevation, and the upper edge of said body part is downwardly bowed as viewed in side elevation,

said structure being further characterized in that when said structure is occupied tension in the lower web is primarily tranverse and is substantially more than half the local occupant weight, so that transverse horizontal spreading of said lower web portion is accomplished primarily by tension in the structure, and in that vertical force components supporting local occupant weight are transferred from the edges of the sleeping surface to a portion of the body means above the occupant.

4,057,860

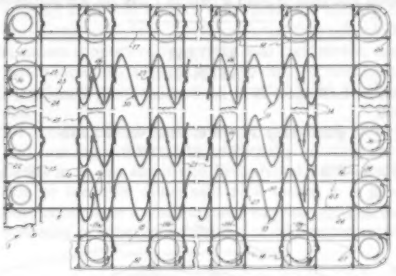
BOX SPRING ASSEMBLY

Larry Higgins, Carthage; John Thomas King, Sarcoxie; Blondie Butler, Carthage, all of Mo., and Francis R. Struewing, deceased, late of Carthage, Mo. (by Barbara C. Struewing, administratrix), assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Oct. 10, 1975, Ser. No. 621,496

Int. Cl.[2] A47C *23/02*

U.S. Cl. 5—247 19 Claims



1. A box spring assembly for use in supporting a bed mattress, said assembly comprising

a rectangular base frame located in the bottom plane of said box spring assembly,

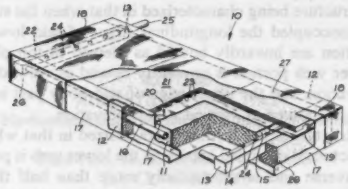
a plurality of slats extending between two opposite sides of said base frame,

a rectangular border wire generally overlying said base frame, said border wire being located in a plane spaced from but parallel to the plane of said base frame,

a grid of wires located in the plane of said border wire and defining the top plane of said box spring assembly, said grid comprising a plurality of longitudinal and transverse wires secured at their opposite ends to said border wire, and

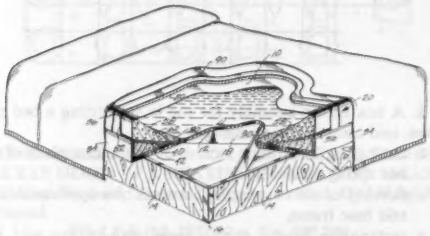
a plurality of parallel spiral spring wires extending generally perpendicular to said slats, and spiral spring wires being secured at the bottom to said slats and at the top to said grid of wires.

4,057,861
MATTRESS
Frederick Hugh Howorth, Chorley, England, assignor to Howorth Air Engineering Limited, Bolton, England
Filed June 17, 1976, Ser. No. 696,944
Claims priority, application United Kingdom, June 28, 1975, 27431/75
Int. Cl.[2] A47C 23/00, 25/00, 27/00
U.S. Cl. 5—365 1 Claim



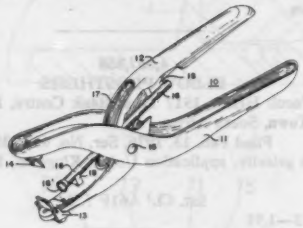
1. A mattress comprising: a base member dimensioned and constructed to be capable of providing support for a patient;
an air-impermeable waterproof covering over the upper surface of the base member to prevent ingress of body fluids to the interior of the base member;
A removable diffuser of air-permeable open-celled foam material overlaying and supported by the upper surface of the base member;
air distribution passages between the upper surface of the diffuser and the waterproof covering arranged to enable conditioned air to be supplied to a substantial part of the diffuser for issuing from the surface of the diffuser, the air distribution passages being constituted by channels formed in at least one of the underside of the diffuser and the upper surface of the base; and
air supply means for conducting conditioned air from a source to the channels to be distributed by the passages and issue from the upper surface of the overlay to impinge upon and pass around a patient lying on the mattress.

4,057,862
WATER BED
Richard A. LaBianco, 2071 La France, South Pasadena, Calif. 91030
Filed May 24, 1976, Ser. No. 688,961
Int. Cl.[2] A47C 27/08
U.S. Cl. 5—370 52 Claims



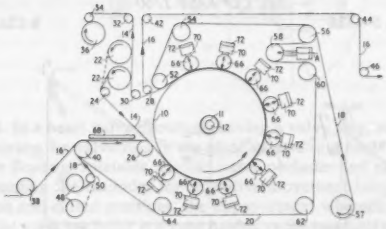
1. A framework for confining a water-filled bladder of a water bed, the framework comprising an elevated means of lateral support for extending around the periphery of the water-filled bladder to provide lateral support for the periphery of the bladder, the lateral support means having a fixed lower support member and an upper support member resting on a surface of the lower support member, and means hinging an inner portion of the upper support member to enable the upper support member to pivot away from said surface of the lower support member to increase the size of an elongated space located between the upper and lower support members to provide means for receiving bedclothes overlying the water-filled bladder.

4,057,863
PLIER ASSEMBLY
Homer G. Bewley, 1731 Mountain View Drive, Boise, Idaho 83704
Filed Sept. 12, 1975, Ser. No. 609,477
Int. Cl.[2] B25F 1/00
U.S. Cl. 7—5.4 4 Claims



1. A plier, comprising:
a first S-shaped jaw handle and a second S-shaped jaw handle pivotally mounted to each other, the superimposed corresponding sections of said jaw handles forming suitably configured handles and jaw extremities;
a blade including a knife disposed transversely to and being dependently carried on the interior side of the jaw extremity of said first jaw handle; and
an anvil jaw subassembly including a mounting flange providing means for mounting the anvil jaw to the jaw extremity of the jaw handle opposing said jaw handle carrying said blade, and said anvil jaw being defined by an L-shaped working flange provided by an upstanding flange which is pivotally mounted to said mounting flange transversely with respect to said plier.

4,057,864
WET TRANSFER PRINTING PROCESS AND APPARATUS
Kenneth Wild, Middleton, England, assignor to Tootal Limited, Manchester, England
Filed June 27, 1975, Ser. No. 591,152
Claims priority, application United Kingdom, July 9, 1974, 30276/74; Apr. 28, 1975, 17523/75
Int. Cl.[2] D06P 7/00
U.S. Cl. 8—2.5 R 4 Claims



1. A process for wet transfer printing comprising impregnating a fabric web with an aqueous solution by passing the web through an impregnation mangle, passing the wet impregnated fabric web together with a transfer web, with one web on top of the other, between the periphery of a heated cylinder and a moving, endless, water impervious belt which is guided around a major portion of the periphery of the cylinder and tensioned so as to subject the webs to a first pressure and, during passage

of the webs around the cylinder, successively passing the webs beneath a plurality of pressure applicator means mounted radially outwardly of the cylinder at circumferentially spaced locations around the cylinder whereby to periodically subject the webs to additional pressures when the webs pass between said circumferentially spaced pressure applicator means and said cylinder, the individual magnitudes of said additional pressures applied by the pressure applicator means to the webs being of progressively increasing level, considered in the direction of passage of the webs around the cylinder, and the combined effect of the first and additional pressures being sufficient to flatten the fabric web whereby the transfer and fabric webs are placed in intimate contact and also being sufficient to form a substantially continuous aqueous film between the two webs.

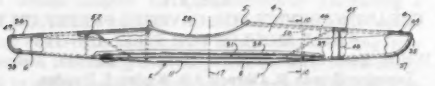
2. A wet transfer printing machine comprising impregnation mangle means for impregnating a fabric web with an aqueous solution, a rotatable cylinder, means for heating the cylinder to a predetermined temperature, an endless belt of water impervious material which is guided around a major portion of the periphery of the cylinder, means for tensioning said endless belt, guide means for guiding a transfer web and said wet, impregnated fabric web around the cylinder beneath said belt, with one web on top of the other, whereby the belt tension subjects the transfer/fabric web combination to a first pressure, and a plurality of pressure applicator means mounted radially outwardly of the cylinder at circumferentially spaced locations around the cylinder, each pressure applicator means including a pressure applicator member and actuator means for displacing said pressure applicator member towards the cylinder, said pressure applicator means being actuated to subject the transfer/fabric web combination to additional pressures when the web combination passes between said circumferentially spaced pressure applicator means and said cylinder, the actuator means being adjusted such that the individual magnitudes of said additional pressures applied by said pressure applicator means to said transfer/fabric web combination are of progressively increasing level, considered in the direction of passage of said web combination around the cylinder the combined effect of the first and additional pressures being sufficient to flatten the fabric web whereby the transfer and fabric webs are placed in intimate contact and also being sufficient to form a substantially continuous aqueous film between the two webs.

4,057,865

FOLDABLE KAYAK

Robert Trautwein, 2048 N. 32nd St., Milwaukee, Wis. 53208

Filed June 30, 1976, Ser. No. 701,112
Int. Cl.² B63B 7/06
U.S. Cl. 9—2 F **9 Claims**



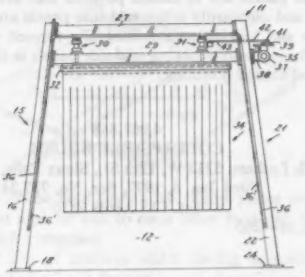
1. A foldable kayak comprising forward bow and rearward stern rigid bottom sections with hinge means joining the same together on a generally central transverse vertical parting plane and extending substantially short of the ends of the kayak, a flexible water tight skin forming the bow and stern of the kayak and extending above said bottom sections with a central opening in the top thereof for access of an operator, inflatable means integral with said skin and mounting the same around the periphery of said bottom section, and separable bow and stern removable frame means carried by said bottom sections, and extending therefrom longitudinally within end portions of said skin to support and shape the bow and stern portions of said skin.

4,057,866

APPARATUS FOR WASHING AND DRYING MOTOR VEHICLES

James A. Belanger, Northville, Mich., assignor to Belanger, Inc., Northville, Mich.

Filed Oct. 1, 1976, Ser. No. 728,824
Int. Cl.² B60S 3/04
U.S. Cl. 15—97 B **14 Claims**



1. Apparatus for automatically washing, drying, buffing, polishing, or otherwise finishing a motor vehicle which is transported therethrough comprising:

a frame;

a first generally horizontal support carried by said frame;

rack means for carrying a plurallity of pack units of finishing material for operatively engaging said motor vehicle;

said rack means including a first generally rectangular rack having its longitudinal dimension parallel to said horizontal support, said first rack being adapted to carry a plurality of said pack units; and a second generally rectangular rack having its longitudinal dimension parallel to said horizontal support, said second rack being adapted to carry a plurality of said pack units; said first and second racks being disposed on opposite sides of said horizontal support such that both of said racks will serially engage said motor vehicle as it is transported through said frame;

arm means supportively carrying said rack means, said arm means including a first portion pivotally connected to said support and a second portion coupled to said rack means; and

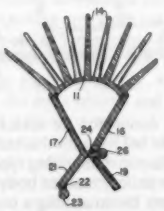
drive means carried by said frame operatively coupled to said arm means for at least partially rotating said arm means in an arc about said first pivotally connected portion to rockably move said rack means in a generally horizontal plane to facilitate the washing, drying, buffing, polishing or otherwise finishing of said motor vehicle.

4,057,867

POCKET HAIR BRUSH

Gene Ballin, Locust Valley, N.Y., assignor to Product Resources International, Inc., New York, N.Y.

Filed May 21, 1976, Ser. No. 688,806
Int. Cl.² A46B 7/02
U.S. Cl. 15—185 **9 Claims**



1. A brush and cover device integrally formed of a poly-

meric resin comprising a flexible intermediate rectangular panel having bristles projecting upwardly from the top face thereof, a pair of side panels integral with and extending along the sides of said intermediate panel and joined thereto by self hinges of reduced thickness and swingable between a closed position upwardly along the sides of said bristles and a downwardly converging open position, wing panels extending along the outer side edges of said side panels and forming dihedral angles therewith, said wing panels overlying said bristles when said side panels are in closed position and diverging downwardly and outwardly when said side panels are in their open position and locking means integrally formed with said side panels for releasably locking said side panels in their respective open and closed positions.

4,057,868

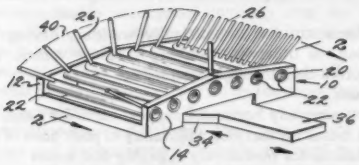
COLLAPSIBLE BRUSH

Roger D. Latham, 5213 W. 12th St., Sioux Falls, S. Dak. 57106

Filed Jan. 6, 1977, Ser. No. 757,242

Int. Cl.² A46B *9/10*

U.S. Cl. 15—203 **14 Claims**



1. A collapsible brush comprising:

a frame;

a plurality of cylindrical rods supported by said frame in a manner such that their longitudinal axes are parallel to one another;

a row of bristles supported by each of said rods;

a groove in each of said rods extending generally longitudinally thereof and including a curved segment;

a handle mounted for movement with respect to said frame, said handle including a plurality of projections extending within respective ones of the grooves whereby when said handle is moved so that the projections engage the curved groove segments, the rods are rotated about their longitudinal axes to move the rows of bristles between collapsed and raised positions.

4,057,869

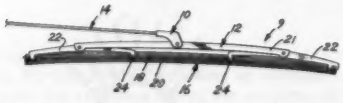
WINDSHIELD WIPER UNIVERSAL CONNECTOR FOR BAYONET AND HOOK ARMS

Rodney A. Longman, Deerfield Beach, and Thomas J. Chiaramonte, Boca Raton, both of Fla., assignors to Pylon Corporation, Fort Lauderdale, Fla.

Filed Jan. 13, 1977, Ser. No. 759,084

Int. Cl.² B60S *1/40*

U.S. Cl. 15—250.32 **8 Claims**



1. A universal connector for selectively coupling a windshield wiper blade holder with the end of a windshield wiper arm of either the bayonet mounting type or the hook mounting type comprising a unitary molded body having a pair of spaced apart side members for straddling a central portion to receive the bayonet arm end, first complementary means for detachably securing the bayonet arm end to the body, said body including a smoothly contoured exterior surface, adapted to receive a hook type arm, and second complementary means for detachably securing the hook type arm to the body.

4,057,870

WINDSHIELD WIPER BLADE

Wolfgang Priesemuth, Postkamp 13, D-2210 Itzehoe-Nordoe, Germany

Filed Oct. 3, 1975, Ser. No. 619,394

Claims priority, application Germany, Oct. 8, 1974, 2447923

Int. Cl.² B60S *1/04*

U.S. Cl. 15—250.41 **9 Claims**

1. A windshield wiper assembly comprising resilient mounting means, a wiper blade of resilient material having a base portion secured to said resilient mounting means, a central longitudinal web integral with said base portion and a longitudinal wiping portion integral with said longitudinal web and engageable with the surface of a windshield, said wiping portion being wider than said web and spaced from the base, auxiliary wiper means mounted on said wiper blade comprising a supporting wiper structure extending the length of said wiper blade on each side of said wiping portion to form a frame having longitudinal elements spaced by less than the width of said wiping portion, with each of said elements fixed to and supported by said web on each side between said base portion and said wiping portion, and an auxiliary wiper body of resilient material secured on said element on each side, said auxiliary wiper body being of less height from said element than said wiping portion and formed with an edge for engagement with the surface of the windshield, said central longitudinal web flexing under engagement of said wiping portion with the surface of the windshield to cause engagement of one of said auxiliary wiper bodies on one side of said wiping portion with said surface, and connecting elements extending between said base portion of said wiper blade and underlying said wiper structure elements on opposite sides of said wiping portion to retain said supporting wiper structures on said wiper blade while allowing flexing of said central web with said wiping portion and said supporting structures.

4,057,871

CLEANING DEVICE FOR CAVITIES PREFERABLY IN CHILL MOULDS FOR STEEL INGOTS

Walter Emil Erich Heydorn, Hallefors, Sweden, assignor to Ingenjorsfirman R. Ohrnell AB, Karlstad, Sweden

Filed Nov. 3, 1976, Ser. No. 738,399

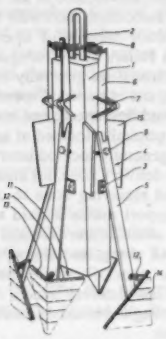
Claims priority, application Sweden, Nov. 3, 1975, 7512258

Int. Cl.² B67C *1/08*; A46B *7/02*

U.S. Cl. 15—56 **3 Claims**

1. A cleaning device for cavities, preferably in chill molds for steel ingots, comprising an elongated support body, a plurality of lever means each having an upper end and a lower end, means on said body for pivotally mounting said lever means intermediate said ends about an axis perpendicular to the axis of said body, an elongated cleaning means pivotally mounted on the lower end of each of said lever means for pivotal movement about an axis parallel to the axis of said mounting means, each of said cleaning means having a cleaning surface facing away from said body, the said mounting means

permitting the lower ends of said lever means and said cleaning means mounted thereon to expand outwardly, first spring means connected to said lever means to normally pivot said lower ends of said lever means outwardly from said body, second spring means connected between said cleaning means



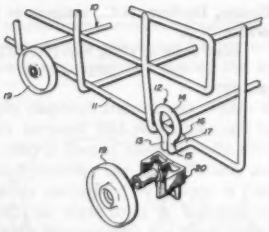
and said lever means to pivot said cleaning means so that the lower ends of said cleaning means extend inwardly toward said body forming an oblique angle with the axis of said body when said cleaning means are out of contact with the interior surface of a mold.

4,057,872

ROLLER MOUNT

Bradley J. Schmidt, East Dundee, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 17, 1976, Ser. No. 658,642
Int. Cl.[2] B60B 33/00
U.S. Cl. 16—29 16 Claims



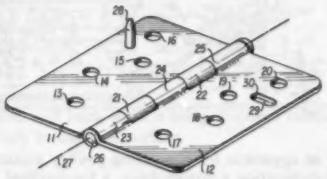
1. A mount adapted for complimentarily journalling a hubbed roller or a wire basket or the like having a wire eyelet including a first leg, a substantially closed loop extending from the leg and a second leg extending from the loop substantially parallel to and adjacent the first leg, the mount comprising an axle having a free-ended shaft adapted to rotatably carry the roller and a free-ended extension for location within the eyelet loop, a plurality of arms extending from the axle extension free end for embracing the eyelet wire at a corresponding plurality of locations, and means on the axle extension for radially locating the axle in and on the eyelet, said means for radially locating said axle include shoulder means radially extending from the axle extension for engagement with the loop, collar means axially separating said shaft and said extension and located to engage a portion of the loop for spacing the collar from the eyelet, and a collar flange extending from said collar in a first direction to bear against the loop and against the collar so as to cooperate in preventing mount tipping.

4,057,873

DOOR HINGE COUPLING DEVICE

Rudolph Bursani, 3735 69th Way North, St. Petersburg, Fla. 33710

Filed Mar. 25, 1976, Ser. No. 670,406
Int. Cl.[2] E05D 11/00
U.S. Cl. 16—137 2 Claims



1. In a hinge of the type having two hinge plates pivotally connected about a pintle axis to each other by a pin, the improvement which comprises,

an elongated slot of uniform width having opposite ends with a longitudinal axis formed in one of said hinge plates, said axis being perpendicular to said pintle axis, and

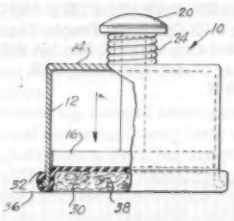
a projection bent outwardly from said other hinge plate along a line perpendicular to said pintle axis to extend normally therefrom penetrating said slot to bear firmly against both ends of said slot whenever said hinge is closed, whereby said projection has two oppositely disposed contacting surfaces, one contacting surface being no greater than a right angle and the angle of the second contacting surface being an acute angle relative to said other hinge plate, both said contacting surfaces bearing against opposite ends of said slot when said hinge is closed.

4,057,874

FOOD PATTIE MOLDING TOOL

Fred T. Walker, Jr., Box 146, Babcock, Wis. 54413

Filed Mar. 26, 1976, Ser. No. 670,677
Int. Cl.[2] A22C 7/00
U.S. Cl. 17—32 6 Claims



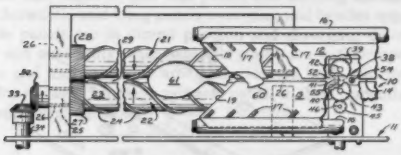
1. A household, manually operable food pattie molding tool comprising, a cylinder having an open bottom, a piston slidably disposed for reciprocating movements within the cylinder and having a pushrod projecting upwardly out of the cylinder, means for guiding reciprocating movements of the pushrod, a manually operated handle fastened to the top of said pushrod, resilient means biasing the piston upwardly, and resilient diaphragm means covering the open bottom and secured to said cylinder but not to said piston or pushrod for deformably yielding upwardly into engagement with the interior surface of the cylinder and the under surface of the piston when the diaphragm, tool and piston are pressed downwardly on a quantity of plastic food to mold the same and for returning downwardly to it original shape to serve as the sole means for automatically ejecting the molded pattie when the tool is lifted.

4,057,875

FEED APPARATUS FOR POULTRY GIZZARD PROCESSING MACHINE

Carl J. Hill, Rte. 3, Box 229, Ball Ground, Ga. 30107

Filed Nov. 3, 1976, Ser. No. 738,437
Int. Cl.[2] A22C 17/14
U.S. Cl. 17—43 **9 Claims**



1. In an apparatus for processing poultry gizzards comprising in combination a power drive, a longitudinal feed trough having an upstream end and a downstream end and along which said gizzards are moved longitudinally thereof in an established direction toward the downstream end, said trough having a longitudinal opening of a width sufficient to permit the gut and gullet of the gizzard to pass therethrough while sufficiently narrow to prevent the gizzard and the stomach attached thereto from descending therethrough so that they will remain on the trough, and a device below the trough opening and between said ends for removing the gullet and the gut from the stomach and gizzard, the improvement wherein said device comprises:

a pair of gears rotatable about substantial vertical axes and having top sides and bottom sides, said gears interengaging each other and defining a nip therebetween, said nip being positioned below said opening, one of said gears being connected to said power drive to rotate the gears in a direction such that at the nip the gears are moving in said established direction, whereby the gut and gullet will be engaged by the gears at said nip and pulled thereby in said established direction; and

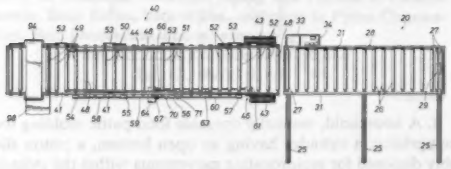
knife means immediately adjacent one of said sides at about said nip and having a cutting edge facing in the reverse of said established direction for severing the gut and gullet as they are so engaged and pulled.

4,057,876

METHOD AND APPARATUS FOR CONVEYING AND BREAKING APART FIBER MODULES

Joe F. Sawyer, 3602 Gila Trail, Temple, Tex. 76501

Filed Oct. 10, 1975, Ser. No. 621,385
Int. Cl.[2] D01G 7/10
U.S. Cl. 19—80 R **10 Claims**



1. An apparatus for conveying and breaking apart fiber modules comprising in combination:

means for supporting at least one fiber module in a generally horizontal position, said support means having a fiber module receiving zone at one end thereof, and a fiber module delivery zone, spaced from said receiving zone;

means for breaking apart a fiber module, said breaker means located adjacent the fiber module delivery zone of said support means; first drive means for conveying a fiber module along said support means from said receiving zone to said breaker means, wherein the first drive means includes a plurality of sets of power driven rollers, one of said sets being generally located at said fiber module delivery zone and at least one of said sets being generally located intermediate said fiber module delivery zone and said fiber module receiving zone, each of said sets having associated therewith at least one gear box for rotating said sets of power driven rollers; one set of said power driven roller sets, generally located at the fiber module receiving zone, having associated therewith two gear boxes of different gear ratios capable of operating said one set of power driven rollers at a first speed being equal to the speed at which said set generally located at said delivery zone operates, and at a second speed which is substantially greater than said first speed; and clutch means, associated with said set generally located at said receiving zone and with said set generally located intermediate said receiving zone and said delivery zone, for enabling said set generally located at said receiving zone to convey a fiber module along said support means at said second speed until the fiber module abuts a fiber module, which has previously been conveyed along said support means, at a location beyond said set generally located intermediate said receiving zone and said delivery zone;

means for removing the broken apart fiber module from said breaker means;

a shuttle carriage for transferring a fiber module from a first location laterally displaced from the support means to a second location which is axially aligned with the receiving zone of said support means, said shuttle carriage including a frame and a generally horizontal fiber module receiving surface; and

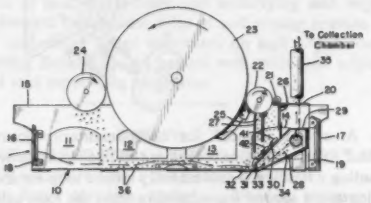
second drive means for conveying a fiber module from said shuttle carriage to the receiving zone of said support means, said second drive means including a plurality of rotatably mounted power driven rollers comprising said generally horizontal fiber module receiving surface, said rollers being operable to convey a fiber module from said shuttle carriage to the fiber module receiving zone of said support means.

4,057,877

WASTE CLEANING IMPROVEMENT FOR CARDING MACHINES

Josef K. Gunter, Durham, N.C., assignor to Gunter & Cooke, Inc., Durham, N.C.

Filed June 4, 1976, Ser. No. 692,649
Int. Cl.[2] D01G 15/82
U.S. Cl. 19—107 **1 Claim**



1. In a carding machine having in series a feed roll, a lickerin roll, a main cylinder, and a doffer roll mounted for rotation on a supporting card frame having closed sides and having a doffer waste collection area having an end wall and said wall in said doffer waste collection area having an opening therein to admit the flow of air longitudinally through said card frame, and a lickerin waste collecting chamber beneath the lickerin and feed rolls, a plenum chamber having a downwardly sloping waste-collecting chute in said lickerin waste-collecting chamber, said chute terminating in a waste-collecting plenum intake nozzle, and a suction exhaust means communicating with said plenum chamber to induce a flow of air longitudinally along the interior of the carding machine frame from the doffer waste and lickerin waste chambers to exhaust said waste

to a remote location, side doors mounted on said supporting frame immediately adjacent to said lickerin waste chamber, the improvement comprising at least one elongated sloping opening on each of said side doors at opposite sides of said frame and in juxtaposition and inclined relative to the sloping waste-collecting chute to admit a flow of air therethrough in a cross current flow to the longitudinal flow of air induced to flow through said frame and over said chute to said nozzle thereby sweeping substantially transversely across said sloping chute directly adjacent to said elongated sloping opening to remove downwardly waste normally collected on said chute adjacent to said side doors to said nozzle with other waste collected on said chute.

4,057,878

WIRE CONNECTOR

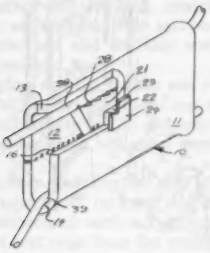
Sidney P. Kaye, Delta, Canada, assignor to Tree Island Steel Co. Ltd., New Westminster, Canada

Filed Sept. 13, 1976, Ser. No. 722,804

Claims priority, application United Kingdom, Sept. 17, 1975, 38213/75

Int. Cl.² F16G *11/04*; B25G *3/20*

U.S. Cl. 24—134 R **4 Claims**



1. A wire connector for connecting a pair of wires comprising:

a. an elongated sleeve open at each end for slidably receiving wires to be connected, said sleeve having substantially parallel opposite edge walls for seating the wires to be connected,

b. an elastic pin disposed transversely within the sleeve intermediately between said side edges and being non-rotatably secured at least at one end to the sleeve,

c. a double-ended jamming cam non-rotatably mounted on the pin yieldably maintained by the pin in frictional engagement with the wires so as to, automatically, rotate into jamming engagement with the wires when tension is applied to the wires to withdraw them from the sleeve.

4,057,879

HEADERS WITH INSERTABLE LATCH MEMBERS

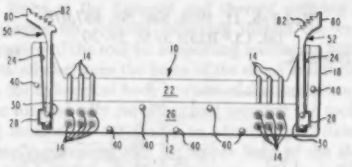
George Thomas Eigenbrode, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 557,578, March 12, 1975, Pat. No. 3,993,390. This application June 23, 1976, Ser. No. 698,799

Int. Cl.² A44B *19/00*; E05C *19/06*

U.S. Cl. 24—230 R **2 Claims**

1. An insertable latch for holding a block in a circuit board header, said latch being molded and comprising a base having a top and sides, a ribbed rectangular member extending from one side of said base, an elongated tapered latch arm extending from its top, and a latch release member disposed at an oblique angle to said arm at its free end, said latch arm having a side surface joining the opposite side of said base at an included angle slightly less than 180°, said latch release member projecting beyond said side surface of the arm and thereby presenting



a latch surface, said latch surface being disposed substantially perpendicularly to said side surface.

4,057,880

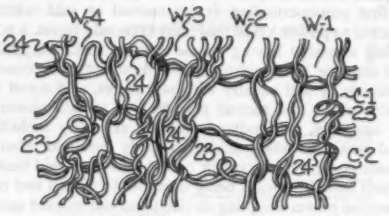
METHOD OF PRODUCING SNAG RESISTANT HOSIERY ARTICLE

Robert M. Matthews, Pittsboro, and William J. Lawson, Siler City, both of N.C., assignors to Kellwood Company, St. Louis, Mo.

Filed Sept. 23, 1976, Ser. No. 725,998

Int. Cl.² D04B *1/26*; D02G *1/00*

U.S. Cl. 28—154 **2 Claims**



1. A method of producing a stretchable hosiery article blank for use in forming panty hose characterized by increased snag resistance in at least certain portions thereof, said method comprising

mechanically crimping a self-crimping bicomponent thermoplastic yarn, having the latent characteristic of becoming crimped when heated, by arranging the bicomponent yarn in a sinuous configuration including a series of stitch-like bends and heat setting the bicomponent yarn in said sinuous configuration,

knitting the mechanically crimped bicomponent yarn while forming a normal size greige hosiery blank of substantially one-half the size of a corresponding greige hosiery blank knit of a self-crimping bicomponent yarn which has not been machanically crimped so that the normal size hosiery blank may be processed in the usual manner prior to development of the latent crimp,

carrying out the normal procedures in producing a panty hose, such as toe closing, slitting, seaming and the like,

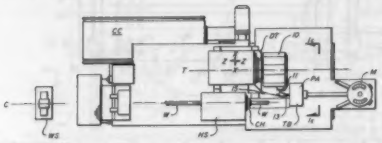
forming additional crimp in the knitted mechanically crimped bicomponent yarn by developing the latent crimp characteristic thereof through the further application of heat to the panty hose whereby at least certain portions of the panty hose are formed of yarn having two distinct types of crimp, one type being imparted to the yarn prior to being knit in the hosiery blank and forming substantially U-shaped crimps in certain stitch loops, and the other type of crimp being imparted thereto after the yarn is knit in the hosiery blank and forming complete coils in certain stitch loops, said two types of crimp imparting substantially increased snag resistance to the portions of the panty hose formed of said bicomponent yarn.

4,057,881

MACHINE TOOL APPARATUS

Richard G. Stephens, 3414 Hickory Lane, Binghamton, N.Y. 13903

Filed Feb. 11, 1976, Ser. No. 657,078
Int. Cl.[2] B23B *3/18, 39/20*
U.S. Cl. 29—27 C 34 Claims



1. In a turret lathe having a machine base, headstock means fixedly mounted on said base and operable to continuously rotate a workpiece about a first axis, a turret rotatably indexable about a second axis to a plurality of discrete index positions to selectively present successive tools carried on said turret to said workpiece, means for indexing said turret about said second axis, and means for translating said turret relative to said base in a first coordinate direction parallel to said first axis whereby one or more of said tools carried on said turret may perform turning operations on said workpiece as said workpiece is rotated by said headstock means, the combination of: a first power-coupling device carried on said turret and connected to power a first tool carried on said turret, a power-coupling assembly having a base portion spaced a predetermined distance from said turret and mounted to be translated simultaneously and equally with said turret, said turret being rotatable about said second axis relative to said power-coupling assembly, said power-coupling assembly including a second power-coupling device movably mounted relative to said base portion and actuator means affixed to said base portion, said actuator means being operable to extend and retract said second power-coupling device from and toward said base portion of said assembly to engage and disengage said second power-coupling device with and from said first power-coupling device, a power source mounted on said base at a fixed distance from said headstock means, and power-connection means extensible in said first coordinate direction for transmitting power from said power source to said second power-coupling device.

4,057,882

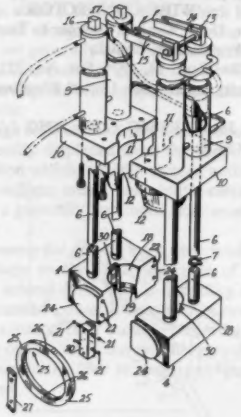
APPARATUS FOR COMPRESSING SLEEVES ONTO STRUCTURAL RODS

Geoffrey Malcolm Bowmer, Sandton, Transvaal, South Africa, assignor to Zeitgeist AG., Zug, Switzerland

Continuation-in-part of Ser. No. 487,029, July 10, 1974, abandoned. This application Apr. 12, 1976, Ser. No. 676,349
Claims priority, application South Africa, Aug. 6, 1973, 73/5327; Mar. 25, 1974, 74/1914
Int. Cl.[2] B23P *11/00*
U.S. Cl. 29—283.5 7 Claims

1. Apparatus for fastening to adjacent substantially co-axially disposed reinforcng rod ends a sleeve of uniform external cross-section throughout its length and having internal cross-sectional dimensions to enable it to receive and embrace both rod ends, comprising at least two fluid pressure operated jack units each having a cylinder, a piston and a piston rod; latching means for releasably securing the jack cylinders together in parallel spaced relationship to one another around one of the reinforcing rods in a zone not occupied by the sleeve; at least two die segments, which collectively provide an axial bore at least part of which is dimensionally smaller in cross-section than the external cross-sectional dimension of the sleeve, loosely mounted on the free ends of the piston rods so as to be capable of limited rotational movement relative thereto in a longitudinal direction; die segment retaining means at the extremities of the piston rods; pusher means associated with the jack cylinders extending in a direction towards the die segments which engage one end of the sleeve and prevent it from moving axially relative to the rods; ring-shaped locking members for temporarily securing the die segments in operative relationship one to the other and which permit the aforesaid limited rotational movement thereof; and complementary formations on the die segments for receiving the ring-shaped locking members.

2. Apparatus for fastening to adjacent substantially co-axially disposed reinforcing rod ends a sleeve of uniform external cross-section throughout its length and having internal cross-sectional dimensions to enable it to receive and embrace both rod ends, comprising at least two fluid pressure operated jack units each having a cylinder, a piston and a piston rod; mounting plates to which the jack cylinders are attached and through which the piston rods pass; latching means for releasably securing the jack cylinders with their mounting plates together



in parallel relationship around one of the reinforcing rods in a zone not occupied by the sleeve; die segments corresponding in number to the number of mounting plates, which collectively provide an axial bore at least part of which is dimensionally smaller in cross-section than the external cross-sectional dimension of the sleeve, loosely mounted on the free ends of the piston rods so as to be capable of limited roational movement relative thereto in a longitudinal direction; die segment retaining means at the extremities of the piston rods; pusher means on the mounting plates extending in a direction towards the die segments which engage one end of the sleeve and prevent it from moving axially relative to the rods; ring-shaped locking members for securing the die segments in operative relationship one to the other and which permit the aforesaid limited rotational movement thereof; and complementary formations on the die segments for receiving the ring-shaped locking members.

4,057,883

METHOD OF ASSEMBLING ROTARY BALL VALVE

George J. Paptzun, and Anthony B. Monnig, both of Cincinnati, Ohio, assignors to The Lunkenheimer Company, Cincinnati, Ohio

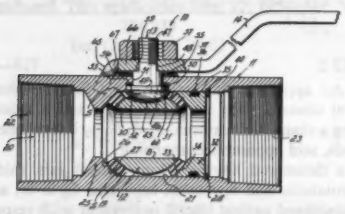
Division of Ser. No. 416,051, Nov. 15, 1973, Pat. No. 3,948,480. This application Jan. 26, 1976, Ser. No. 652,173
Int. Cl.[2] B23P *15/00;* F16K *5/14*
U.S. Cl. 29—157.1 R 22 Claims

1. A method of assembling a rotary ball valve having a valve body, a passageway therethrough defined by passageway walls, an integral seat support in said valve body extending into said passageway, a first flat annular seat ring made of a material susceptible to cold-flow, a ball valve member, a second flat annular seat ring made of a material susceptible to cold-flow, a

movable seat support and an assembly retaining means, said seat supports each defining frustoconical seat ring support surfaces facing said ball valve member and wherein spaces between said frustonconical surfaces and said ball valve member increase in dimension from points near said passageway toward points radially outwardly thereof, the method comprising the steps of:

inserting, in order, into said passageway said first flat annular seat ring, said ball valve member, said second flat annular seat ring, said movable seat support and said assembly retaining means;

applying force to said ball valve member, seat rings, movable seat support and said assembly retaining means to urge said seat rings, said ball valve member, and said movable seat support toward said integral seat support in



order to secure said assembly retaining means in said passageway and thereby hold said seat rings, said ball valve member and said movable seat support in their respective positions, and

thereby deforming said flat annular seat rings to conform to the ball valve member and to the seat supports in sealing engagement therewith so that said seat rings form respective seals between said ball valve member and said supports; and

the method further including the step of compressing said seat rings respectively between said ball valve member and said frustoconical surfaces, respectively, thereby deforming said seat rings from flat configuration to frustoconical configuration, tapered in cross-section in order to fill portions of said spaces in sealing engagement with said ball valve member and said frustoconical surfaces.

4,057,884

TOOL HOLDER

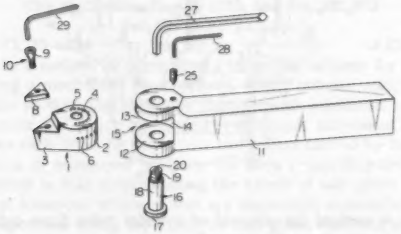
Masakazu Suzuki, Sowa, Japan, assignor to Suzuki Iron Works Co., Ltd., Japan

Filed Apr. 20, 1976, Ser. No. 678,719

Claims priority, application Japan, Jan. 16, 1976, 51-3900

Int. Cl.² B26D *1/00*

U.S. Cl. 407—89 **3 Claims**



1. A tool holder comprising a tool bit supporting member having a generally cylindrical body portion having an axial bore therethrough and a tool bit supporting portion projecting from the side surface of the cylindrical body portion for releasably mounting a tool bit on the upper surface thereof, the upper surface of said cylindrical body portion having a plurality of indexing and fixing recesses therein angularly spaced around said bore and the peripheral side surface of said body portion having a plurality of rough indexing recesses therein angularly spaced around said surface, a shank having vertically spaced limbs at the forward end thereof defining a recess therebetween for slidably receiving therein the cylindrical body portion of the tool bit supporting member, a bolt extending vertically between the limbs of the shank and through said bore in the cylindrical body portion of the tool bit supporting member for pivotally mounting and securing the tool bit supporting member to the shank, an adjusting and fixing screw threadingly engaging with the upper limb of the shank and having a tip end for engaging selectively with one of the angularly spaced indexing recesses in the upper surface of the cylindrical body portion, and a ball mounted in the shank and urged resiliently against the peripheral side of said body portion for engaging in one of the angularly spaced rough indexing recesses in the side surface of the cylindrical body portion.

4,057,885

METHOD OF PRODUCING AN OSCILLATING WEIGHT FOR AUTOMATIC TIMEPIECES

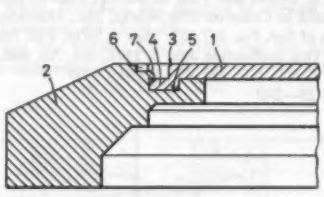
Urs Giger, Solothurn, and Friedrich Perrot, Lengnau, both of Switzerland, assignors to Eta A.G. Ebauches-Fabrik, Switzerland

Filed May 13, 1976, Ser. No. 686,068

Claims priority, application Switzerland, May 30, 1975, 7030/75

Int. Cl.² B23P *13/00, 11/00*

U.S. Cl. 29—177 **5 Claims**



1. In a method of producing an automatic timepiece oscillating weight of the type comprising a heavy-metal segment and a metallic center portion having a flanged rim, wherein an arcuate groove is formed in the upper face of the segment adjacent to the periphery thereof, the flanged rim of the center portion is axially inserted in the groove, and portions of the segment and of the flanged rim are wedged together at at least two mutually spaced spots for rigidly connecting the center portion to the segment, the improvement comprising the steps of:

forming the groove slightly wider than the flanged rim to be inserted therein for facilitating assembly, and

wedging the segment portion over the rim portion or the rim portion under the segment portion by means of localized pressure exerted substantially at right angles to the plane of the center portion.

4,057,886

TOY CONSTRUCTION SYSTEM HAVING REUSABLE DISTENSIBLE JOINING MEMBERS

Robert L. Brass, 4 Norwood Lane, Westport, Conn. 06880

Division of Ser. No. 660,320, Feb. 23, 1976, abandoned. This application Jan. 3, 1977, Ser. No. 756,334

Int. Cl.² B23P *19/02*

U.S. Cl. 29—235 **9 Claims**

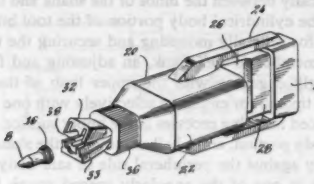
1. A device for temporarily inserting and thereafter withdrawing elastomeric, bullet-shaped joinder units from holes in toy structural elements, said joinder units having a base and a body portion with a bore therein, said body portion having a relaxed outer diameter greater than the diameter of said holes

and, when longitudinally stressed, less than the diameter of said holes, said device including

jaws for gripping said base,

a wire insertable in said bore to longitudinally stress said joinder unit,

means for moving said wire longitudinally and in a relative direction away from said base, and



a trigger in said device for controlling said wire-moving means,

whereby said joinder unit may be longitudinally stressed to permit insertion or removal of said joinder units in or from the holes in said toy structural elements.

4,057,887

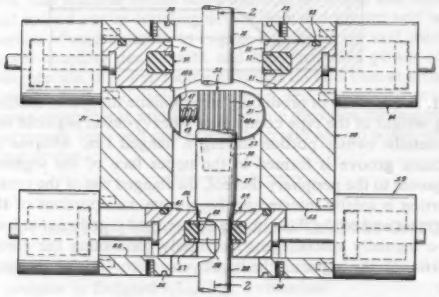
PIPE DISCONNECTING APPARATUS

Marvin R. Jones, and Paul E. Helfer, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Division of Ser. No. 467,158, May 6, 1974, Pat. No. 3,957,113. This application Jan. 2, 1976, Ser. No. 646,247

Int. Cl.² B25B *17/00*

U.S. Cl. 29—240 **41 Claims**



1. Apparatus for disconnecting the lower threaded end of an upper section from the upper threaded end of a lower section of a pipe string which is held against movement within the bore of an underwater wellhead through which the strings extends, comprising a housing adapted to be connected as a part of the wellhead, said housing having a bore therethrough alignable with the bore of the wellhead to receive the ends of said sections, and guideways extending outwardly from the bore, and a ram guidably movable longitudinally within each guideway toward and away from the bore, each ram including means arranged to grippingly engage and move along a side of the end of the upper section, and thereby exert a force on said upper section tending to rotate it about its axis, as the ram is moved in one direction, and to be relieved from said gripping engagement, as the ram is moved in the opposite direction, whereby said ram may be returned to a position from which it may again be moved in said one direction for exerting force on said upper section.

4,057,888

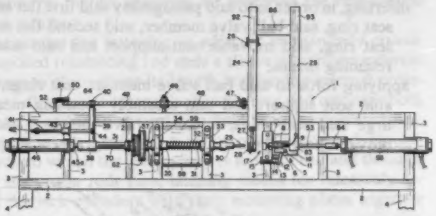
NUT DRIVING ASSEMBLY APPARATUS

Robert G. Gottlieb, Prairie Village, Kans., assignor to Lewis Industries, Inc., Kansas City, Mo.

Filed Aug. 9, 1976, Ser. No. 712,928

Int. Cl.² B23P *19/04*

U.S. Cl. 29—240 **17 Claims**



1. An apparatus for assembling a first member having a central channel with internal threads and a second member having a shank with external threads, by interconnection of the threads, said apparatus comprising:

a. a thrust rod having a longitudinal axis, said rod being rotatable and moveable back and forth on said axis yet stabilized against lateral movement with respect thereto,

b. holding means mounted on one end of said thrust rod, said holding means having a gripping end that meshes with said first member,

c. a spindle which extends through said holding means and through said first member enmeshed by said gripping end of the holding means, said spindle having an outermost tip which contacts said second member and which retracts through said first member upon interconnection of the two members by means of their threads, and

d. thrusting means whereby said shank of the second member is urged axially toward said central opening of the first member.

4,057,889

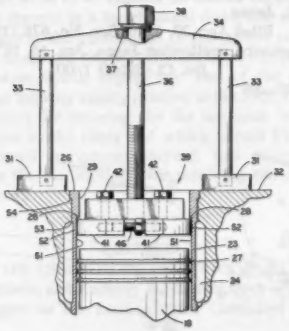
ENGINE CYLINDER SLEEVE PULLER AND METHOD

Marvin D. Ferguson, R.R. 2, Box 258, Clayton, Ind. 46118

Filed Mar. 19, 1976, Ser. No. 668,727

Int. Cl.² B23P *19/02*

U.S. Cl. 29—427 **12 Claims**



1. A method for removal of cylinder tubes from cylinder blocks comprising the steps of:

mounting a puller support on the cylinder block in registry with the open end of the cylinder tube;

forcibly and rigidly engaging diametrically opposite areas on the inner cylindrical surface of the cylinder tube above a piston therein with a pair of puller jaws, in an arc greater than 90° for each jaw, by applying force to said jaws in a

direction radially outward with respect to the cylinder axis;

then applying a force in the direction of the cylinder axis only to the puller jaws through the puller support to force the jaws towards the support and thereby pull the cylinder tube outwardly of the cylinder block as the jaws remain forcibly and rigidly engaged with said areas, but without increasing radially outward directed force on said jaws.

4,057,890

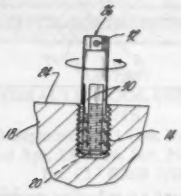
METHOD OF REMOVING BROKEN THREADED FASTENERS

Orlin J. Feen, 11102 Dale Ave., Warren, Mich. 48089

Continuation-in-part of Ser. No. 620,040, Oct. 6, 1975, abandoned, which is a division of Ser. No. 465,288, April 29, 1974, abandoned. This application Dec. 27, 1976, Ser. No. 754,238

Int. Cl.[2] B23P *19/02*

U.S. Cl. 29—427 **2 Claims**



1. A method of removing the broken shank portion of an externally threaded fastener of the type having a head portion adapted to provide a drive surface for installation of said shank portion into a mating threaded bore, the method comprising the steps of: forming a plurality of circumferentially spaced slots along the length of said shank, said slots being formed into the threaded portion of said shank fastener prior to installation thereof in said mating threaded bore; filling the slots with a lubricant material; forcing the lubricant material in each slot into the surrounding threads by inserting a tool having projections complementarily shaped to the slots into the slots; rotating said shank portion out of said bore by means of said tool, by engagement with said circumferentially spaced slots, whereby any portion of said fastener shank may be removed along which said circumferentially spaced grooves extend.

4,057,891

TELESCOPIC COLUMN FOR X-RAY APPARATUS

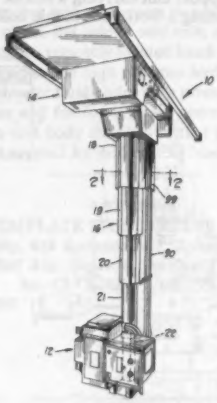
William H. Amor, Jr., Auburn Township, Cuyahoga County, and Robert J. Steffek, Wickliffe, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Division of Ser. No. 418,128, Nov. 21, 1973, Pat. No. 3,986,697. This application June 4, 1976, Ser. No. 692,973

Int. Cl.[2] B23P *11/02*

U.S. Cl. 29—434 **3 Claims**

1. In a method of fabricating a telescopic column for connecting a mechanism to a support, which column comprises tubular sections that telescope together with substantial radial clearance and which are guided in telescopic movement relative to each other by guide bars and rollers carried by facing surfaces of telescoped portions, the steps comprising drilling apertures in said sections along the extent of said guide bars and at locations where rollers are supported, counterboring said apertures along the extent of said guide bars and at the locations of the rollers at one of the inside and outside surfaces of said sections, providing plugs with body portions shaped congruent with the apertures and each with a flange receivable within the counterbores, the body portions being dimensioned to fit within the apertures with an interference fit when the sections and plugs are at uniform temperatures, establishing a temperature differential between the plugs and sections sufficient to permit the plugs to fit into the apertures with a clearance fit, placing plugs into the apertures and eliminating the



temperature differential, and securing the guide bars and rollers to said plugs on opposite surfaces of said sections.

4,057,892

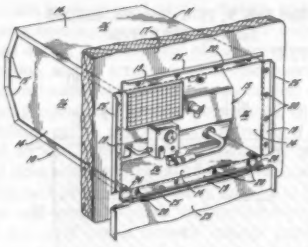
METHOD OF INSTALLING A WATER HEATER IN A RECREATIONAL VEHICLES

Donald M. White, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Division of Ser. No. 537,903, Jan. 2, 1975, Pat. No. 3,986,492. This application Aug. 2, 1976, Ser. No. 710,460

Int. Cl.[2] B23P *19/00*

U.S. Cl. 29—526 R **1 Claim**



1. A method of installing a water heater having a boxlike case of rectangular cross-section, said case being made of sheet metal panels and having an open forward end, said method comprising the steps of inserting the forward end of said case forwardly through an opening in a wall and past the forward side of the wall, bending the forward margins of said panels outwardly to form flanges lying in face-to-face relation with the forward side of said wall, and securing said flanges to said wall.

4,057,893

MILLING TABLE LATHE

Joe Delano Smith; David Daniel McCall, and James Alexander Kyzer, all of Orangeburg, S.C., assignors to Still-Walter Tool & Manufacturing Company, Orangeburg, S.C.

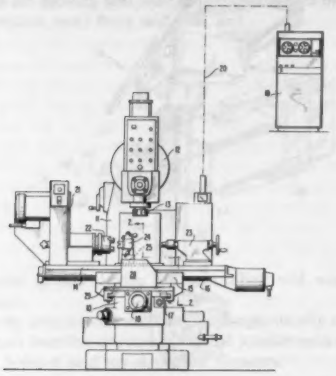
Filed Apr. 7, 1976, Ser. No. 674,638

Int. Cl.[2] B23P *23/02*; B23Q *37/00*

U.S. Cl. 29—560 **7 Claims**

1. A milling table lathe comprising in combination a numerically controlled milling machine including a stationary ma-

chine bed and a numerically controlled translational milling table mounted on said bed lathe head attachment for said milling table removably mounted thereon said attachment including workpiece holding and rotating means, a fixed cutting tool holder support unit carrying a holder with a cutting tool thereon for turning a workpiece in said holding and rotating means during numeric control translation of the rotating workpiece relative to said cutting tool holder support unit while mounted on said table, said support unit including a support member for said tool holder spanning said milling table and spaced therefrom and being fixedly secured to said stationary machine bed on which said milling table is translationally mounted.

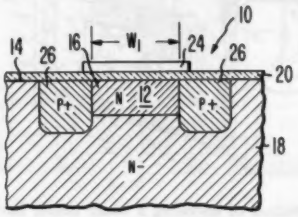


4,057,894

CONTROLLABLY VALUED RESISTOR

Heshmat Khajezadeh, Somerville, and Stephen Carl Ahrens, Delran, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 9, 1976, Ser. No. 656,295
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—577 C **5 Claims**



1. In a method of making a monolithic semiconductor device having a resistor disposed adjacent to a planar surface thereof, which method includes forming a first region of one type conductivity adjacent to said surface and forming two spaced ohmic contacts thereto, the improvement including steps for controllably establishing the value of said resistor comprising:

forming said first region in a second region of said one type conductivity disposed adjacent to said surface, said second region having a lower impurity concentration than said first region, whereby the conductive path of said resistor is contained within the more-heavily-doped first region, and

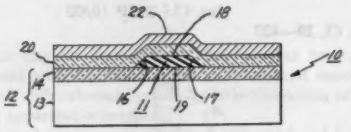
forming two additional regions of said opposite type conductivity respectively on opposite sides of said conductive path adjacent to both said surface and the junction between said first and said second regions, said additional regions having a higher impurity concentration and a greater depth than said first region and extending into said first region, whereby the width of said resistor, as measured along the perpendicular to said conductive path at various locations along said conductive path, is established by the extent of said additional regions into said first region.

4,057,895

METHOD OF FORMING SLOPED MEMBERS OF N-TYPE POLYCRYSTALLINE SILICON

Mario Ghezzo, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 20, 1976, Ser. No. 724,988
Int. Cl.[2] H01L *7/50*
U.S. Cl. 29—591 **8 Claims**



1. A method of forming a conductive member of N-type and high conductivity polycrystalline silicon on a surface of an insulating substrate with at least one side thereof sloping gradually to said surface of the insulating substrate comprising

forming a layer of polycrystalline silicon on said surface of the insulating substrate,

forming a region of N-type and high conductivity including boron impurities in a concentration in excess of about 10^{18} atoms per cubic centimeter and extending from the exposed surface of said layer of polycrystalline silicon to the opposite surface thereof, said region having at least one generally planar side portion, said side portion of said region gradually sloping from the exposed surface of said layer of polycrystalline silicon to the opposite surface thereof and making a small acute angle with the base of said region lying on said surface of the insulating substrate,

etching said layer of polycrystalline silicon with an etch which etches polycrystalline silicon containing boron impurities in excess of said concentration at a rate substantially less than the rate at which it etches polycrystalline silicon not containing boron impurities for a period of time to remove the portion of said layer of polycrystalline silicon not containing boron in excess of said concentration,

whereby said region of said polycrystalline layer remains to provide said conductive member on said insulating substrate.

4,057,896

RAZOR HANDLE

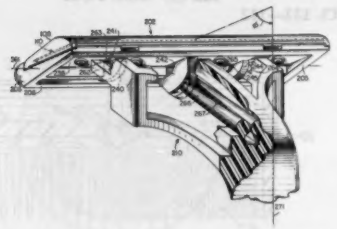
Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 576,252, May 12, 1975, abandoned.
This application Oct. 14, 1976, Ser. No. 732,467
Int. Cl.[2] B26B *21/14, 21/52*
U.S. Cl. 30—89 **8 Claims**

1. A razor handle for a razor blade assembly adapted to be movably mounted on said handle and having cam means thereon for receiving a biasing force from said handle, said razor handle comprising:

pivot mounting means disposed on arm portions of said razor handle; and

first and second cam follower means having portions extending from said razor handle and adapted to engage said cam means of said razor blade assembly and to simultaneously



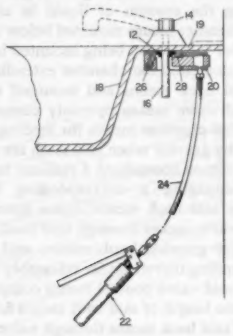
move for exerting biasing force thereon, said extending portion of said first cam follower means having a longitudinal axis substantially parallel to a longitudinal axis of said extending portion of said second cam follower means.

4,057,897

PORTABLE HYDRAULIC TOOL USEFUL FOR CUTTING NUTS

Charles Mitchell Seymour, 1581 Oak Road, Simi, Calif. 93606

Filed Apr. 19, 1976, Ser. No. 677,971
Int. Cl.² B26B *7/00*
U.S. Cl. 30—272 R **4 Claims**



1. A portable hydraulic tool for cutting and removing basin nuts securing faucets to a flat surface of a sink where the basin nuts are secured onto the threaded portions of the faucet assembly which extend through holes and protrude down to the rear of and underneath the sink in very cramped quarters, comprising:

a compact hydraulic working unit including a frame body member having a flat surface, and an opening of generally oval configuration extending from said flat surface for receiving the threaded pipe, said opening having an additional recess extending from said flat surface around the major portion of said opening for accommodating said basin nut while the balance of said opening is of a lesser cross-sectional size to centrally locate said pipe without the need for visually observing the relative position of said working unit relative to the basin nut and pipe;

a hydraulic cylinder in said body unit;

a piston having one end mounted in said cylinder and the other end extending into said opening for engaging said pipe;

means including a jaw having a curved configuration lying substantially flush with the flat recessed side of said frame member and movable in said recess for engaging one side of the basin nut, the center of the curved portion of said jaw being secured to said piston and spaced back from the face of said piston so that the point of engagement of the front face of said piston is significantly forward from the point of engagement of the center of the jaw;

means including a cutting blade for cutting the side of the basin nut opposite to said jaw and said piston, said cutting blade extending into said recess to a point substantially in the plane of the flat side of said unit; and

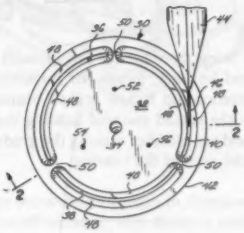
means including a remotely located hand-powered hydraulic pump and a flexible high pressure hydraulic line for supplying hydraulic fluid under high pressure to said hydraulic cylinder and for forcing said piston and jaw forward relative to said body member so that the basin nut is engaged and severed by said cutting blade.

4,057,898

REPAIR TEMPLATE FOR CARPETS OR THE LIKE

Dennis E. Piosky, 416 Scranton Ave., Lynbrook, N.Y. 11563

Filed Aug. 16, 1976, Ser. No. 714,494
Int. Cl.² B26B *11/00, 29/02*
U.S. Cl. 30—289 **5 Claims**



1. A template for repair of a carpet or the like that is used by dimensioning a replacement cut-out from said carpet material for a visibly damaged area in said carpet of a comparatively small size, said template comprising a body sized to extend in covering relation over said damaged area and having an operative position in superposed relation thereto, said body having a positioning opening therein through which said damaged area is sighted during the placement of said template in said operative position, and an arrangement of disconnected knife-guiding grooves located in said body in surrounding relation to said positioning opening to enable the removal of said damaged area within a carpet removal cut-out having a shape and size dictated by said knife-guiding grooves, said grooves having beveled sides which converge toward and terminate in edges bounding each of said knife-guiding grooves to precisely shape and size said carpet removal and replacement cut-outs, said shaped and sized carpet removal cut-out providing a correspondingly shaped and sized opening in said carpet, said template being adapted to be operatively positioned in cutting relation to a selected carpet area of minimal visibility for obtaining a replacement cut-out using said knife-guiding grooves thereof, whereby said replacement cut-out is dimensioned so as to be readily inserted in place in said opening previously occupied by said removal cut-out.

4,057,899

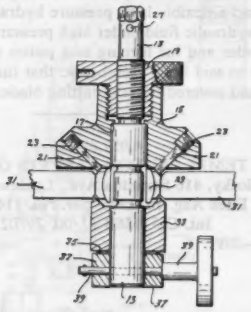
STAKED BEARING CUTTER

Edward M. Ostendorf, St. Charles, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1977, Ser. No. 756,940
Int. Cl.² B26B *27/00*; B26F *1/38*
U.S. Cl. 30—296 R **3 Claims**

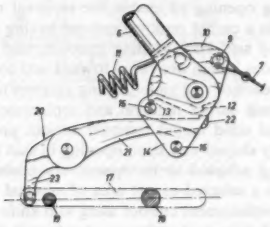
1. A staked bearing cutter for relieving material on a 360° staked bearing, said cutter comprising an elongated pin member having a plurality of shoulders thereon, a threaded section near the upper end of said pin member, a housing having an internal opening therethrough for receiving said pin member

therein, a shoulder on said housing being engaged with a shoulder on said pin member, the upper portion of the internal opening in said housing being threaded, a bushing having a threaded internal opening therethrough for engagement with the threads on said pin member, the lower external surface of



said bushing being threaded for engagement with the internal threads in said housing, means for maintaining the cutter in concentric relationship to said staked bearing and means for cutting away the staked material holding the bearing in place by rotating said pin member causing the gradual removal of the staked material around the bearing.

4,057,900
POWER SAW
György Nagy, Molndal, and Bengt Olof Johan Stellan Morner, Hovas, both of Sweden, assignors to AB Partner, Sweden
Filed May 25, 1976, Ser. No. 689,923
Claims priority, application Sweden, June 4, 1975, 7506347
Int. Cl.[2] B27G *19/06*; B27B *17/02*
U.S. Cl. 30—382 **9 Claims**



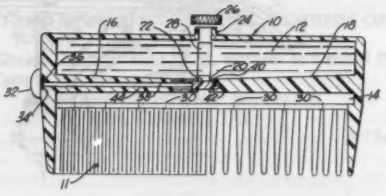
4. In a power saw having a cutter bar, a saw chain mounted to travel around said cutter bar and a safety brake for stopping the saw chain, an improved device to provide for automatic release of said safety brake comprising:

a blocking mechanism for holding said braking means in a non-braking position,

said cutter bar being mounted in the saw in a manner to permit short pivotal movements upwards from its normal position relative to the body of said saw, and

mechanical release means mounted in the saw and coupled to the cutter bar to receive a force transmission from an upward pivotal movement of the cutter bar, and having a segment thereof responsive to said force transmission to release the said blocking mechanism and cause said brake to be actuated.

4,057,901
WET COMB
Gary Bloem, 175-19th Ave., San Francisco, Calif. 94121
Filed Aug. 4, 1975, Ser. No. 601,612
Int. Cl.[2] A45D *24/22*
U.S. Cl. 132—112 **1 Claim**

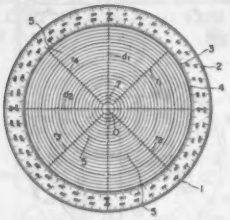


1. A wet comb comprising a flat elongated comb back means, said back means having a plurality of comb teeth means extending laterally from said back means, said back means containing liquid reservoir means which comprise an elongated flat reservoir extending in the same direction as said back means and mounted within said back means, said reservoir laterally tapering from both ends to valve means to form a gravity flow path for feeding liquid to said valve at the apex of said taper, said reservoir means having capped filler means extending upwardly through said back means for filling said reservoir means with liquid and capping said reservoir means after filling, sight glass means mounted on the side of said reservoir means and extending through said back for visually determining the amount of liquid in said reservoir means, metering chamber means mounted below said reservoir means, said chamber means also being mounted in said back and comprising an elongated flat chamber extending in the same direction as said back means and mounted under said reservoir means, said valve means operably connecting said reservoir means to said chamber means for feeding liquid to said chamber means by gravity when said teeth are pointed downwards, said valve means comprising a resilient tapered valve face for sealingly engaging a corresponding tapered valve seat mounted in said back means, valve control means extending from said valve means through said back means and terminating in finger gripable knob means, said knob means having means extending therefrom for releasably securing said knob to said back, said valve control means comprising a stem extending along the length of said back means from said valve face to one end of said back means through valve stem guide means in said back means, said stem operably engaging said face means, said means for securing said knob to said back comprising a plunger secured to said knob at one end opposite the diameter of said plunger, a notch releasably receiving said plunger and comprising an opening in said back oppositely facing said plunger and of a configuration to partially envelop and releasably secure said plunger, effluent means in said chamber means for passing liquid from said chamber means laterally in the direction of said teeth when said teeth are pointed downward.

4,057,902
MULTIPURPOSE DISK PROTRACTOR
Atsushi Matsui, 12, Baban-Cho, Shizuoka, Shizuoka, Japan
Continuation of Ser. No. 604,066, Aug. 12, 1975, abandoned.
This application Sept. 30, 1976, Ser. No. 728,026
Claims priority, application Japan, Aug. 22, 1974, 49-96355
Int. Cl.[2] G01B *3/12*
U.S. Cl. 33—1 N **4 Claims**

1. A disk protractor comprising: a transparent, circular, planar disk having an outer peripheral circumference of 400 n length units, where *n* is an integer; a length scale graduated in said length units and inscribed along and around the circumferential edge of the circular disk from an origin zero point; an angle scale graduated in degrees of angle and inscribed along and around a circle inscribed concentrically relative to said

outer peripheral circumference and having an origin zero point on the same radial line from the center of the circle as the zero point of the length scale; and a polar distance scale comprising a plurality of concentric radially spaced apart circles having a



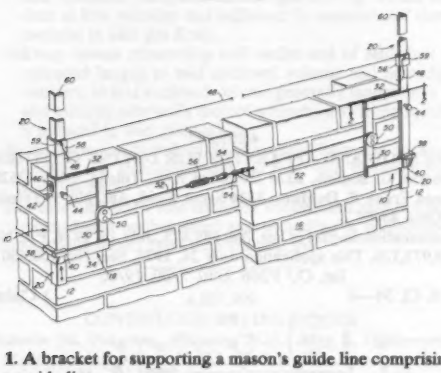
common center coincident with the center of the circular disk and having graduations to indicate distances from the center, the latter circles being equally spaced a distance apart thereof by 2 n of said length units at the outer peripheral circumference.

4,057,903

GUIDE LINE HOLDER

Pasquale Cantera, 11 White Ave., Newton Center, Mass. 02159

Filed June 11, 1976, Ser. No. 694,962
Int. Cl.[2] B43L *7/00*
U.S. Cl. 33—86 **9 Claims**



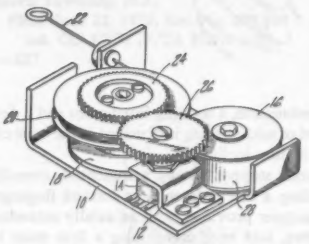
1. A bracket for supporting a mason's guide line comprising:
a guide line,
a base including structure defining an inside corner for engaging the outside corner of intersecting walls, said structure defining first and second planes for planar contact with only exposed vertical faces of said walls,
first and second position indicator means for indicating the orientation of said first and second planes with respect to the vertical,
adjustable means on said base for engaging said wall faces to adjust the orientation of said first and second planes with respect to the vertical;
a retaining line for retaining said base against said wall faces, said retaining line extending from substantially the vertical midpoint of said base and including hook means securable at a location remote for said base, said retaining line including biasing means for tensioning the line,
means for altering the length of said retaining line comprising a reel for storing retaining line on said base,
a guide line support secured to said base and projecting therefrom parallel to the line of intersection of said first and second planes, and comprising means for engaging said line which means are slidable relative to said base in a direction parallel to said line of intersection.

4,057,904

SELF-ADJUSTING STRING EXTENSIOMETER

Joseph D. Vrabel, Concord, and Dennis W. Gosselin, Saugus, both of Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Continuation of Ser. No. 590,814, June 27, 1975, abandoned.
This application July 16, 1976, Ser. No. 705,929
Int. Cl.[2] G01B *3/10*; H01C *10/00*; G01B *7/02*; G01D *1/00*
U.S. Cl. 33—125 R **6 Claims**



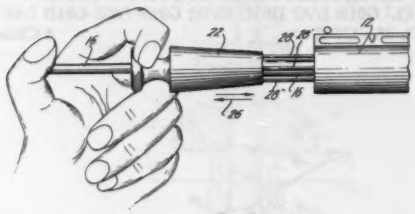
1. Apparatus for measuring changes in distance proportionally small to an overall distance, said distance measuring apparatus automatically adjusting to the overall distance, said distance measuring apparatus comprising:
an extendable element;
rotatable drum means for storing said extendable element;
electrical signal generator means, said signal generator means including a pair of relatively movable members and providing an output signal which varies in accordance with the relative positioning of said movable members, said signal generator means further including fixed stops for determining the opposite limits of the relative movement between said members to thereby determine the signal generator means output signal excursion;
signal generator means drive means, said drive means including a rotatable shaft having a first end coupled to said signal generator means for causing relative movement between said members, said drive means further including a slip-clutch installed in said rotatable shaft whereby the second end of said shaft may rotate relative to said shaft first end when either limit of relative motion between said signal generator means relatively movable members is reached;
gear means, said gear means including a first gear mounted for rotation with said rotatable drum means and at least a second gear mounted for rotation with said second end of said signal generator means drive means rotatable shaft, said second gear being coupled to said first gear whereby movements of said drum means commensurate with unwinding or rewinding of said extendable element thereon will be transmitted to said signal generator means through said slip-clutch to cause relative motion between said signal generator means relatively movable members to thereby cause said signal generator means to provide an electrical output signal corresponding to the degree of extension or retraction of said extendable element; and
spring means for applying substantially constant tension to said drum means, said spring means comprising a spring applying rotational torque to said drum means to bias said extendable element in the direction of being rewound on said drum means.

4,057,905

DEVICE FOR THE SECUREMENT OF A SIGHTING INSTRUMENT WITHIN THE BORE OF A SHOTGUN

Joseph Piaja, 470 Piaget Ave., Apt. H3, Clifton, N.J. 07011

Filed Mar. 24, 1976, Ser. No. 669,981
Int. Cl.[2] F41G 1/54
U.S. Cl. 33—234 2 Claims



1. In combination, a sighting instrument and a device for the securement of said sighting instrument in the bore of a shotgun, said combination including:

a. a muzzle stopper having a truncated, cone-like contour including a circumferentially formed fingergrip therein, said stopper provided with an axially extending cylindrical bore, said bore comprising a first main bore, and a second larger diameter counterbore,

b. a main shaft extending through said cylindrical bore and adapted for spring-biased reciprocal movement therewithin,

c. a spring annularly surrounding said main shaft and in contact with said counterbore for facilitating said spring-biased reciprocal movement;

d. an end core disposed at the end of said shaft located furthest away from said finger-grip of said muzzle stopper; and

e. three resilient ball-bearing rods each having a ball-bearing at the same one end thereof, each of said rods situated about said shaft at a 120° angular displacement from each other, each of rods being secured at its non-bearing end to that portion of said stopper opposite to said finger-grip, each of said ball-bearings normally pressing against the periphery of said end cone, wherein the longitudinal position of said ball-bearings with respect to said shaft is self-established through said reciprocating movement of said muzzle stopper, thereby attaining a precise fit of said muzzle stopper within the gun bore and an absolute concentricity of said main shaft with respect to the bore, wherein said sighting device is mounted on the end of said main shaft opposite said end cone.

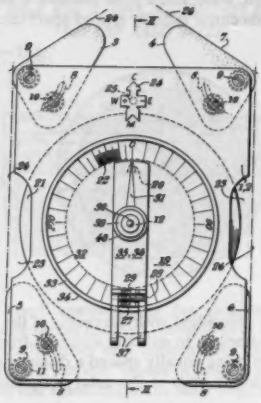
4,057,906

NAVIGATIONAL INSTRUMENTS

Richard Creighton King, Rozel, 19 The Drive, East Preston, Littlehampton, Sussex, BN16 1QL, England

Filed Jan. 23, 1976, Ser. No. 651,621
Claims priority, application United Kingdom, Feb. 12, 1975, 5864/75; Oct. 17, 1975, 42590/75
Int. Cl.[2] G01C 1/00, 21/00
U.S. Cl. 33—278 18 Claims

1. A portable navigational instrument comprising a supporting body having a plurality of edge portions which form extremeties of the instrument and are angularly adjustable to angles which correspond to a plurality of walls of a vessel, said walls having arbitrary angular orientation with respect to the fore and aft axis of the vessel, and means for holding said edge portions at the angles to which they are adjusted, whereby when said edge portions are so adjusted the instrument may be placed against each one of said walls of the vessel without its orientation with respect to the vessel changing, and means



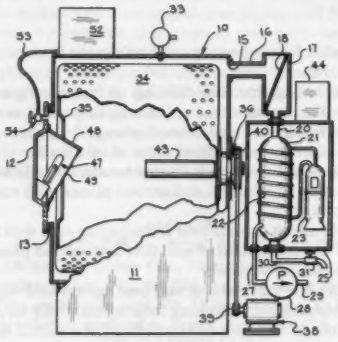
supported by the supporting body for determining the bearing of the object.

4,057,907

METHOD AND APPARATUS FOR DRYING CLOTHES

Norman G. Rapino, 2220 Robinson Ave., Toledo, Ohio 43620, and Frank P. DeMuro, 3324 Secor Road, Apt. No. 9, Toledo, Ohio 43606

Continuation-in-part of Ser. No. 489,475, July 18, 1974, Pat. No. 3,972,126. This application July 26, 1976, Ser. No. 708,650
Int. Cl.[2] F26B 3/30, 7/00, 19/00
U.S. Cl. 34—4 3 Claims



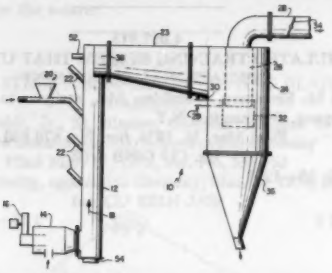
1. A method of drying clothes comprising the steps of placing the clothes in a sub-atmospheric space, maintaining the sub-atmospheric pressure within the space, agitating the clothes, ultrasonically vibrating the clothes to break large water agglomerates into smaller units and applying microwave radiation to the clothes to excite the water molecules and speed evaporation.

4,057,908

METHOD AND APPARATUS FOR DRYING DAMP POWDER

Melvin J. Mirliss, Long Beach, and Richard B. Nielsen, Los Angeles, both of Calif., assignors to Grefco, Inc., Bala Cynwyd, Pa.

Filed May 20, 1976, Ser. No. 688,462
Int. Cl.[2] F26B *3/08, 17/00;* F27B *15/00*
U.S. Cl. 34—10 13 Claims



1. A damp powder drier for producing unfractured particles or agglomerates, said drier comprised of:

an extended duct having an inlet end and an outlet end;

an enclosed volume having generally circular side walls;

supply means, including a feed port, to provide a continuous supply of damp material to be dried to said extended duct;

means to provide a flow of heated gas into the inlet end of said extended duct, said heated gas moving within said duct at low velocity and sufficient to suspend said damp material in said gas flow;

delivery means connecting said outlet end of said duct of extended length to said enclosed volume and providing entrance to said enclosed volume generally tangentially to said circular side walls thereof whereby a swirling motion is induced in said gas; and

discharge means to collect dried material from said enclosed volume and to exhaust said gas from said chamber by a separate path,

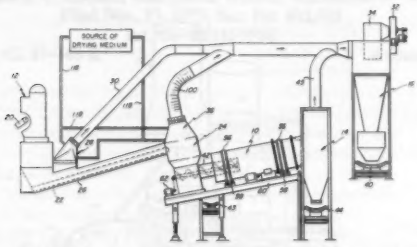
said extended duct, said enclosed volume and said delivery means being unobstructed and providing in combination an unobstructed flow path for said gas.

4,057,909

CONTINUOUS DRYING HOODS

Malcolm M. Paterson, Atkinson, N.H.; John S. DiMercurio, Medford, and Albert H. Mooradian, Winchester, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 13, 1976, Ser. No. 658,136
Int. Cl.[2] F26B *21/00*
U.S. Cl. 34—76 11 Claims



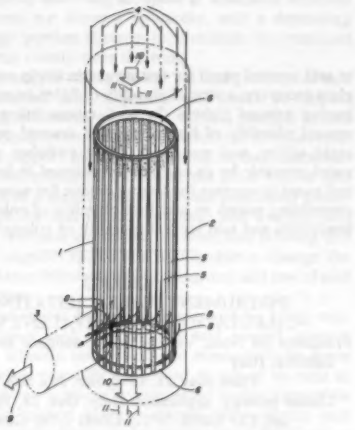
1. A material handling system comprising a chamber, means for directing material into said chamber, a collector hood mounted at the top of said chamber and having primary and second compartments both having their interiors in direct communication with the interior of said chamber, said second compartment encircling at least a major portion of the primary compartment, air inlet aperture means in said second compartment, duct means connected with said primary compartment, and fan means for creating an air stream flowing first into said second compartment through the air inlet aperture means, then into said chamber, and then into said primary compartment and duct means.

4,057,910

EXHAUST QUENCH AIR DIFFUSER

Harold Gerard Sachleben, Sr., Bellmawr, N.J., and Jerry Jay Warren, Richmond, Va., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed June 25, 1976, Ser. No. 699,917
Int. Cl.[2] F26B *13/24;* B29B *3/00*
U.S. Cl. 34—227 5 Claims



1. An apparatus for diffusing flowing quench air at the exhaust of said air from a quench stack for cooling moving synthetic melt-spun fibers, said stack having an exhaust outlet in an exhaust portion of said stack, comprising

a series of slats arranged peripherally between said fibers and said quench stack in said exhaust portion,

said slats being spaced apart to each other and form a plurality of gaps between said slats varying in width, said variation in width of said gaps being wider around the circumference nearer said air exhaust outlet of said quench stack and correspondingly being narrower around the circumference away from said air exhaust outlet of said quench stack.

4,057,911

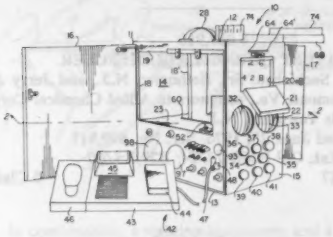
PORTABLE PSYCHO-PHYSICAL AUTOMOBILE DRIVER TESTING DEVICE

Thomas F. Sack, 354 N. Bromley Ave., Scranton, Pa. 18504

Filed July 29, 1976, Ser. No. 709,717
Int. Cl.[2] G09B *9/04*
U.S. Cl. 35—11 R 6 Claims

1. A portable psycho-physical automobile driver testing device comprising a cabinet having top and bottom walls interconnected by end walls and a pair of side walls pivotally mounted to swing outwardly from the cabinet, one of said end walls having a sight opening therein and directed toward a person being tested, a partition within said cabinet intermediate said top and bottom walls and extending between said end walls to define a compartment between said bottom wall and

the partition, a control panel within said cabinet enclosing the area defined by said end walls, said partition and said bottom wall to enclose said compartment, means within said cabinet mounted on the inner face of said top wall for testing depth perception of a person located at a predetermined distance from said one end wall and viewing said means through said sight opening, a first plurality of colored lights on said one end wall, a pair of headlights on said one end wall, means interconnecting said first plurality of colored lights and said headlights



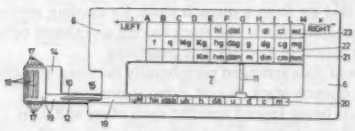
to said control panel for testing respectively reaction time and glare recovery, a second plurality of lights on said one end wall having printed indicia thereon, means interconnecting said second plurality of lights and said control panel for testing night vision, and means including switches on said control panel operable by an examiner positioned in front of said control panel to operate the testing device for actuating said interconnecting means to said first plurality of colored lights, said headlights and said second plurality of colored lights.

4,057,912

INSTRUMENT FOR FACILITATING THE CALCULATION OF EQUIVALENT VALUES

Francesco Di Noia, Verona, Italy, assignor to Idea Didattica Editrice, Italy

Filed May 21, 1976, Ser. No. 688,729
Claims priority, application Italy, Oct. 28, 1975, 84949/75
Int. Cl.[2] G09B *19/02;* G06G *1/06;* G09B *1/28*
U.S. Cl. 35—31 E **8 Claims**



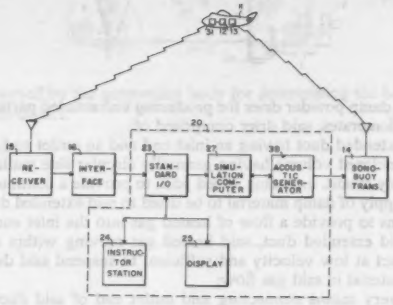
1. A calculating instrument for converting a numeral representing a given quantity in one unit into a numeral representing the same quantity in a different unit, comprising plate means carrying at least one scale of graduations representing different units of a given quantity, with said graduations being situated at a given distance one from the next along said scale, so that the latter scale is stationary with respect to said plate means, movable scale means operatively connected with said plate means for movement with respect thereto in a direction parallel to said stationary scale, said movable scale means carrying a series of graduations situated one from the next at the same distance as said graduations of said stationary scale and said graduations of said movable scale means being indicative of different characteristics of a numeral, pointer means operatively connected with said movable scale means for movement therewith and extending between said movable scale means and said stationary scale, said pointer means being situated along the graduations of said movable scale means at a location where a part of a numeral situated on one side of said pointer means has a given relationship with respect to a part of the numeral situated on the other side of said pointer means, said plate means including a means for initially situating a given numeral indicating the magnitude of a quantity whose units are represented by said stationary scale at a position with respect to said stationary scale where said numeral will indicate said quantity in a given unit of said stationary scale, said pointer means being movable together with said movable scale means with respect to the numeral thus situated initially at a given position with respect to said stationary scale to a location where said numeral can be converted into another numeral indicating the same quantity in a different unit of said stationary scale.

4,057,913

SIMULATED TRAINING SYSTEM THAT UTILIZES OPERATIONAL EQUIPMENT

Robert M. Eisenberg, Woodbine, Md., assignor to The Singer Company, Binghamton, N.Y.

Filed Mar. 26, 1976, Ser. No. 670,620
Int. Cl.[2] G09B *9/08*
U.S. Cl. 35—12 B **7 Claims**



1. A training system that utilizes simulation and operational equipment to train operators in a real-world environment which comprises: a receiver that receives signals pertaining to the location and status of operational equipment from said operational equipment, means for transmitting signals to operational equipment, and a simulator coupled to said receiver and said transmitting means for processing the signal received from said receiver and producing a signal that will stimulate operational equipment when the signal produced by said simulator is transmitted to the operational equipment by said transmitting means.

4,057,914

ORTHOPEDIC BOOTS

Ozmer Lee Oxendine, Box 083-A, Rte. 3, Maxton, N.C. 28364

Filed Dec. 27, 1976, Ser. No. 754,454
Int. Cl.[2] A43B *7/16*
U.S. Cl. 36—81 **5 Claims**

1. A pair of orthopedic shoes for compensation of leg length deformities of the wearer comprising:

a. a first shoe for use on the foot of the wearer's shorter leg, said first shoe having a relatively thick sole area providing

built-up compensation means for the shortness of the wearer's shorter leg; and

b. a second shoe for use on the foot of the wearer's longer leg, said second shoe presenting an outward appearance of having a relatively thick sole, the outer sole material of said second shoe being formed around a shell member to provide an outward appearance of a built-up sole, said shell member providing a recessed area within said second shoe for receiving the foot of the longer leg of the wearer;

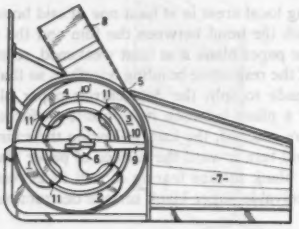
whereby said first and second shoes provide a level walking condition for the wearer.

4,057,915

RING STRUCTURE FOR PREVENTING BLADE DAMAGE

Alfred Schmidt, Jr., St. Blasien, Germany, assignor to Firma Ing. Alfred Schmidt GmbH, Schwarzwald, Germany

Filed Mar. 17, 1975, Ser. No. 558,953
Claims priority, application Germany, Mar. 30, 1974, 2415542
Int. Cl.² E01H 5/09
U.S. Cl. 37—43 C **5 Claims**



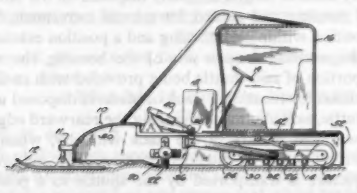
1. A centrifugal snow blower for clearing snow fall comprising a housing defining an opening in the direction of clearing, a fan rotatable about a central axis arranged within said housing, said fan comprising a rotatable shaft having a plurality of curved scoop-like blades, each of which has one end attached to said shaft, each of said blades extending radially from and axially of said shaft to protrude axially through said opening and at least in part out of said housing, said blades each terminating in a rounded leading or cutting edge with the forwardmost extent of each blade being located in a common plane outside said housing and perpendicular to the shaft, and means for preventing introduction of obstacles into said housing and damage to said blades comprising a ring concentric to the central axis of said fan welded to said rounded leading or cutting edges between their forwardmost extent and the front of said housing.

4,057,916

SNOWMOBILE TRAIL LEVELER

Benjamin C. Roemer, Manitowish Waters, Wis. 54545

Filed Nov. 17, 1975, Ser. No. 632,651
Int. Cl.² E01H 5/00
U.S. Cl. 37—43 R **4 Claims**



1. A trail leveler for smoothing the washboard type pattern of snowmobile trails, the leveler being adapted to move over the trail and comprising:

a housing and means to support said housing on the snow as the leveler is moved over the trail to be worked by the leveler;

a rotating member carried by said housing and extending generally transversely to the intended path of the leveler, said rotating member having a plurality of axially extending blades which, upon rotation of said member, are adapted to hit the high sections of the snowmobile trail and to thereby remove such high portions upon impact with the blades and to throw the removed high portions upwardly and towards the inside of said housing; and

motor means adapted to rotate said member in a direction opposite to the intended path of the leveler to thereby cause said blades to bite into the bottom sections of the high portions of the trail as the leveler is moved over the trail;

said housing being further characterized by a shield portion on the top inside surface thereof with depending side walls for substantially enclosing the space in which the removed high portions are thrown upwardly, and a depending trailing edge portion thereon to distribute the removed high portions evenly over the trail;

adjustment means for changing the vertical position of said rotatable member with respect to said means to support said housing to thereby adjust the vertical position of said blades with respect to the surface of the trail to be leveled;

said means to support said housing being further characterized by a first means positioned at the front end of said housing and of a second support means positioned generally towards the rear of said housing, and wherein said adjustment means is connected between said housing and one of said support means and is operable to change the vertical distance between said housing and said one of said support means;

said adjustment means further characterized by being connected between said housing and said second support means, and wherein said adjustment means includes lever means which is pivotally connected at one of its ends to said housing and is pivotally connected to the other of its ends to said second support means, and wherein said adjustment means also includes motor means for pivoting said lever means around its connection to said housing, said lever means comprised of a yoke shaped member with the cross member of the yoke being pivotally attached to said housing and with the lever arms of the yoke extending in a generally fore and aft direction adjacent the sides of said housing and being pivotally connected at their ends to said second support means, said lever means further including a crank section which is fixed to said cross member and which is connected to said lever motor means, said lever motor means adapted to rotate said yoke shaped member around the axis of said cross member; and

said adjustment means further characterized by having a stop means for limiting the degree of movement of said second support means with respect to said housing.

4,057,917

METHOD OF PADDING PIPE

Norman B. Burrows, Rte. 2, Box 3109, Odessa, Tex. 79763

Division of Ser. No. 619,948, Oct. 6, 1975, Pat. No. 3,981,089.
This application Mar. 30, 1976, Ser. No. 672,023
Int. Cl.² E02F 5/22
U.S. Cl. 37—195 **10 Claims**

1. A method of placing padding material within a previously dug ditch comprising the steps of:

mounting a container and a lateral conveyor onto an earth bound vehicle;

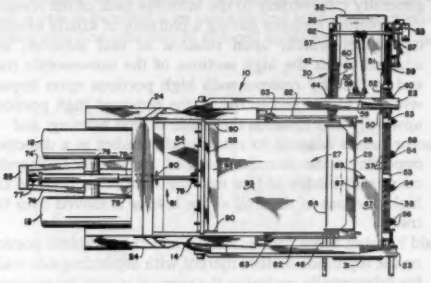
placing padding material within said container

moving said vehicle along a path of travel which is spaced from, adjacent to, and parallel to said ditch;

forming an outlet within said container and forcing said

padding material contained within said container to move through said outlet;

forcing padding material to flow through said outlet by moving opposed walls of said container toward one another so that any padding material contained therebetween is forced to move towards and through said outlet;



receiving material which flows through said outlet by said lateral conveyor;

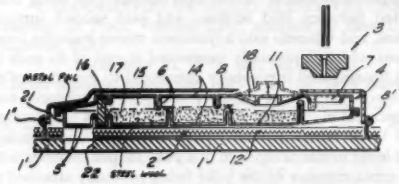
conveying padding material laterally away from said outlet and into said ditch, thereby uniformly placing padding material within said ditch.

4,057,918

STEAM IRON

Hans Zeier, Beethovenstrasse 5, Zurich, Switzerland (8002)

Filed July 12, 1976, Ser. No. 704,695
Claims priority, application Germany, July 11, 1975, 2530926
Int. Cl.[2] D06F *25/06*
U.S. Cl. 38—77.3 **14 Claims**



1. A steam iron comprising a housing, a sole plate on said housing having a pressing surface, a heating element in said housing, a discardable steam-generating chamber received in said housing and heated by said element, said element having a heat-emitting surface juxtaposed with said steam-generating chamber, said steam-generating chamber being composed of shells of thin metallic sheet secured together by beaded flanges and having a heat-receiving surface juxtaposed with said heating element, and stressing means elastically deforming said steam-generating chamber against said heating element to press said heat-receiving surface into face-to-face contact with said heat-emitting surface.

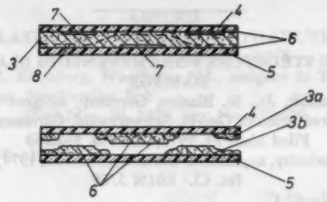
4,057,919

LAMINATED DATA CARRIER PROTECTED AGAINST FORGERY, PARTICULARLY IDENTIFICATION CARD

Wolfgang Gauch, Lohdorf; Wittich Kaule, Munich, and Günter Pauli, Groebenzell, all of Germany, assignors to G.A.O. Gesellschaft fur Automation und Organisation mbH, Germany

Continuation of Ser. No. 561,634, March 24, 1975, abandoned.
This application Aug. 13, 1976, Ser. No. 714,261
Claims priority, application Austria, Apr. 2, 1974, 2709/74
Int. Cl.[2] G09F *3/03*
U.S. Cl. 40—2.2 **15 Claims**

1. A laminated data carrier protected against forgery, particularly an identification card, consisting of a data-carrying fibrous paper blank interposed between two films bonded to the opposite surfaces of the paper blank at respective bonding interfaces to provide a laminated structure, the adhesion of the fibers of said paper blank to each other being of less strength than that of said bonding interfaces, so that said paper blank is splittable along substantially a plane substantially midway between and substantially parallel to said bonding interfaces, with respective portions of the split paper blank adhering to each of said films at the associated bonding interface; said data



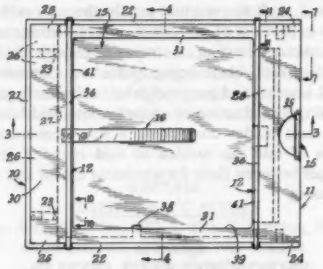
carrier having local areas in at least one of said bonding interfaces in which the bond between the film and the respective surface of the paper blank is at least weakened, relative to the remainder of the respective bonding interface, so that, when an attempt is made to split the data carrier paper blank along substantially a plane between its opposite surfaces, and said local areas are reached, the tear, following the source of least resistance, will turn toward the surface of paper blank, resulting in paper blank surface tearing at said local reas and thus visually perceivable paper blank surface destruction.

4,057,920

PICTURE VIEWER WITH SUCCESSIVE FEED MEANS

John H. Weggeland, 202 Bougenvillea, Lehigh Acres, Fla. 33936

Filed Nov. 24, 1975, Ser. No. 634,919
Int. Cl.[2] G09F *11/30*
U.S. Cl. 40—79 **7 Claims**



1. A picture viewer comprising:

a rectangular housing having three closed and one open side, a top and a bottom,

a manually slidable shuttle normally disposed on the bottom of said housing and guided for manual movement from said position within said housing and a position extending from the mentioned open side of the housing, the rearward portion of said shuttle being provided with an abutment means for locating a stack of pictures disposed upon said shuttle, said abutment engaging the rearward edge of the lowermost picture of the stack whereby, when the shuttle is moved to its extended position, only said lowermost picture is transported by the shuttle to a position beyond the forward side of the stack,

an upwardly flexed tongue provided on the top surface of

the rearward end of the shuttle to upwardly raise the rear end of the picture upon the shuttle; and

the forward end of the shuttle being provided with a raised rearwardly directed lip, the underface of said lip being engaged by the forward end of the picture that is upwardly raised by the tongue, and upon return movement of the shuttle, the picture thereon is moved by the mentioned lip of the shuttle to a position on the top of the stack and into register with the abutment which locates the stack.

4,057,921

DECORATIVE DEVICE

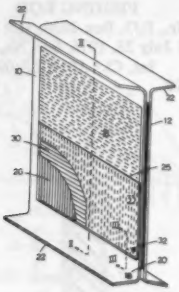
Derek William Ball, 6 Ellerton Way, Karori, Wellington, New Zealand

Filed May 24, 1976, Ser. No. 689,036

Claims priority, application New Zealand, Apr. 13, 1976, 180594

Int. Cl.² G09F *13/24*

U.S. Cl. 40—106.21 **7 Claims**



1. A decorative device comprising:

a pair of sealed sheet-like chambers in face-to-face relationship, the major portion of each said chamber being transparent; spacing means around the periphery of each sheet for forming said chambers; a pair of mutually immiscible fluid phases of different specific gravities provided in each said chamber;

a first coloring substance homogeneously dissolved in at least one phase in one chamber; a second coloring substance homogeneously dissolved in one phase of the other of said pair of chambers; a third coloring substance homogeneously dissolved in the other phase in one of said chambers; said first, second and third coloring substances being insoluble in the other fluid phase in its respective chamber; and a stand means on at least one end of said pair of chambers for resting said device in an upright position;

the arrangement being such that when said device is at rest there is created a static display of predetermined color combinations and when said apparatus is inverted there is created a kinetic superimposition of irregular images or patterns as each of said pairs of phases returns to equilibrium.

4,057,922

METHOD AND DEVICE FOR LIVESTOCK RECORD KEEPING

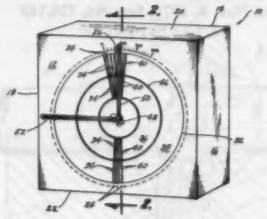
Steven L. Kerns, Ames, Iowa, assignor to Management Utilities, Inc., Ames, Iowa

Filed July 16, 1976, Ser. No. 705,801

Int. Cl.² G09F *1/10*

U.S. Cl. 40—124.2 **5 Claims**

1. A livestock record keeping device comprising a frame, means for rotatably mounting a wheel on said frame, a wheel rotatably mounted on said means, said wheel having a plurality of animal symbol holding means positioned therearound, said frame having a plurality of peg receiving apertures representing each day of the year around the periphery of said wheel,



and a plurality of radially extending adjustably spaced apart marking rods mounted on said wheel.

4,057,923

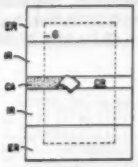
ADHESIVE PICTURE MOUNT

Marston Chase, 1330 New Hampshire Ave., NW., Washington, D.C. 20036

Continuation of Ser. No. 582,156, May 30, 1975, Pat. No. 3,987,569, which is a continuation of Ser. No. 452,554, March 19, 1974, Pat. No. 3,893,252, which is a continuation of Ser. No. 877,583, Nov. 26, 1969, abandoned, which is a division of Ser. No. 690,858, Dec. 15, 1967, Pat. No. 3,517,106. This application Aug. 3, 1976, Ser. No. 711,237

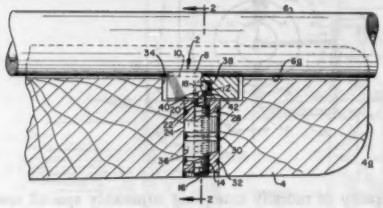
Int. Cl.² G09F *1/10*

U.S. Cl. 40—158 R **8 Claims**



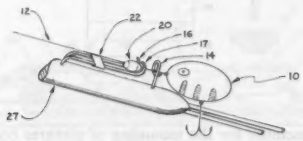
1. An assembly for the mounting of pictures comprising an adhesive picture mount in combination with a mounting board and associated oversheet; said adhesive picture mount comprising a web, a layer of pressure sensitive adhesive on both surfaces of the web, and a cover sheet releasably retained on the adhesive on each surface of the web, each cover sheet comprising two or more readily separable sections extending across the mount, said sections being selectively removable to expose the adhesive whereby one cover sheet section may be removed from one surface while the other cover sheet sections on said one surface remain in place thereby enabling the securing of a picture to an area of adhesive exposed by removal of the said one section while the remainder of the cover sheet sections on said one surface are removed, the remainder of the picture subsequently being secured to the adhesive exposed by the removal of the remainder of the cover sheet sections on said one surface of the web, said mount in turn being attachable to said mounting board by removal of the cover sheet sections from the other surface of the web; said oversheet being detachably secured to the mounting board in overlying relation thereto and serving as a support adapted to receive the picture mount on its outer surface, the oversheet being in registry with the mounting board and having guide lines thereon serving as guide elements on its outer surface for positioning the picture mount on the front face of the mounting board, said oversheet being selectively removable from the mounting board beneath the picture mount for a securing of the picture mount to the mounting board.

4,057,924
RIFLE BARREL STABILIZER
Robert P. Joseph, 805 Stark St., Austin, Tex. 78756
Filed Nov. 4, 1976, Ser. No. 738,749
Int. Cl.[2] F41C *27/00*
U.S. Cl. 42—75 A 6 Claims



1. In a device for adjusting the force between a rifle barrel and rifle stock forearm; a stabilizer block having a longitudinal concaved groove formed in one side of said block, said concaved groove having a radius equal to the radius of the rifle barrel; a downwardly depending threaded screw; means rotatably securing said threaded screw to said block; and a screw housing secured in said stock forearm, said screw housing having a threaded bore to receive said threaded screw such that turning the screw within said threaded bore moves the screw and block relative to the forearm to adjust the force between the forearm and the rifle barrel.

4,057,925
FISHING LURE RETRIEVER
Yen Bak Wong, 3180 38th Ave., Sacramento, Calif. 95820
Filed May 14, 1976, Ser. No. 686,288
Int. Cl.[2] A01K *97/00*
U.S. Cl. 43—17.2 10 Claims



1. A device for retrieving a snagged fishing line having a lure and interconnected swivel fitting at the lower end thereof located a first predetermined distance from the nose of the lure comprising:

an elongated body of substantial weight having a forward end, a rearward end, an upper side and a lower side,

two grappling hooks of heavy guage wire stock capable of plastic deformation, each having a shank portion in substantial parallel alignment with the axis of said body, but below said axis, each extending from the forward end of said body for a distance approximately twice the length of the body of said lure, with one grappling hook extending slightly farther than the other,

wherein the two grappling hooks are formed of one continuous piece of heavy guage wire and extending through the full length of said body extending out the rearward end thereof to form a loop suitable for attaching a cord,

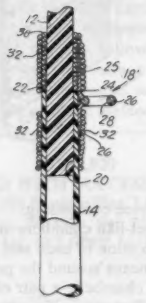
a first eyelet, for detachably connecting to said fishing line, located on the upper side of said body toward the rearward end thereof,

a second eyelet, for detachably connecting to said fishing line, located on the upper side of said body toward the forward end thereof, the opening in said eyelet being large enough to allow said swivel fitting to pass therethrough,

two wire members protruding substantially vertical for a short distance from the upper side of said body at a point substantially back from the forward end of said body, said members after extending vertically a short distance being bent forward forming a shank portion extending forward and then bent upwardly and curved slightly backwardly forming a hook at the end thereof at a distance less than said first predetermined distance prior to reaching said second eyelet, the slot between said hooks being in substantial alignment with said eyelets, and being less than the width of said swivel fitting, whereby said swivel fitting may be engaged in the slot of said upwardly extending wire members,

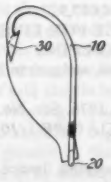
said two wire members being fabricated of a material that can be bent so that the wire members may be spread to avoid engagement of the swivel fitting and a keeper is slidably mounted on said wire members so that it may be moved rearwardly to permit spreading of said wire members or moved forwardly to firmly hold the wire members a fixed distance apart, thereby defining a slot narrower than the width of said swivel fitting.

4,057,926
FISHING ROD
Carl R. Cordell, Jr., P.O. Box 2020, Hot Springs, Ark. 71901
Filed July 23, 1976, Ser. No. 708,199
Int. Cl.[2] A01K *87/00*
U.S. Cl. 43—18 GF 4 Claims



1. A fishing rod comprising a longitudinally tapered, hollow, unreinforced, tubular butt section and a solid rod-like, longitudinally tapered tip section, both sections being formed of fiberglass, a portion of the tip section being inserted in the outer end of the butt section, and a continuous filament wrapping engaging continuous parts of the tip and butt sections so as to conceal the joint of the said two sections.

4,057,927
REVERSE ACTION WEEDLESS HOOK
Kenneth P. Marlowe, Zwolle, La., assignor to Raymond Lee Organization Inc., a part interest
Filed June 3, 1976, Ser. No. 692,281
Int. Cl.[2] A01K *83/00*
U.S. Cl. 43—43.6 5 Claims



1. A weedless fishhook device comprising:

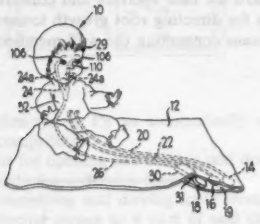
a generally J shaped fishhook with an eye at the top of the J and an upwardly facing barb at the bottom of the J; and an elongated wire spring having a fixed end secured to the fishhook adjacent the eye and a movable end having a spherical ball affixed thereto, said movable end normally extending along the barb with the ball being hooked underneath the barb with the spring passing through the eye intermediate its ends, the spring having a shape at which when the ball is disengaged from the barb the spring snaps downwardly and away from the barb leaving the bottom of the J and the barb fully exposed.

4,057,928

ARTICULATED DOLL

Rouben T. Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 5, 1976, Ser. No. 655,621
Int. Cl.[2] A63H *13/00*
U.S. Cl. 46—120 **5 Claims**



1. An articulated doll, comprising:
a doll torso;
a doll head mounted on the top of said torso by connection means for movement of the head about a definite side-to-side horizontal axis in a bobbing motion to indicate an affirmative characteristic and for movement in a swiveling action about a generally vertical axis to indicate a negative characteristic;
a blanket for said doll for covering at least a portion of the doll; and
actuating means disposed within a compartment of said blanket remote from said connection means but operatively associated therewith, through said blanket, for effecting movement of said head relative to said torso about either of said axes to indicate either affirmative or negative characteristics, with said blanket concealing said actuating means, wherein said doll head has apertures generally in the eye areas thereof, conduit means communicating between said apertures and said compartment of said blanket, and a liquid reservoir in said compartment connected with said conduit means, said actuating means further including means for moving liquid from said reservoir for excreting liquid from said apertures to simulate tearing by said doll.

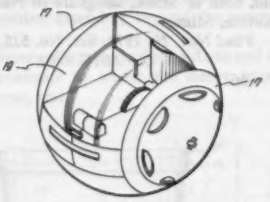
4,057,929

MOBILE RECONFIGURABLE SPHERICAL TOY

Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Japan

Filed June 9, 1976, Ser. No. 694,250
Int. Cl.[2] A63H *17/00*
U.S. Cl. 46—201 **19 Claims**

1. A toy assembly comprising;
a base member having a first and second side wall;
a drive train extending between said first and second sides and having output shaft ends extending respectively from each side wall;
a rotatable auxiliary shaft mounted within said base member for providing first and second rotatable coupling ends extending respectively from each side wall, and



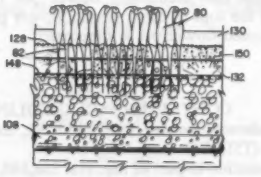
a plurality of section members, each having means for attachment to said base member, and contoured such that when said section members are connected to said base member, a substantially spherical toy object results.

4,057,930

HYDROPONIC METHOD AND APPARATUS

Rayford A. Barham, 9101 Snowheights Northeast, Albuquerque, N. Mex. 87112

Continuation-in-part of Ser. No. 496,448, Aug. 12, 1974, abandoned. This application Mar. 18, 1976, Ser. No. 668,064
Int. Cl.[2] A01G *31/02*
U.S. Cl. 47—61 **18 Claims**



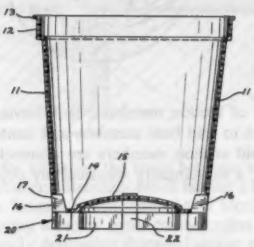
1. A hydroponic chamber comprising: a liquid holding chamber; a perforated, generally planar seed support member suspended in said chamber entirely above a predetermined level of liquid therein; means defining a substantially uniplanary arranged aeration grid in said chamber, substantially above the bottom of said chamber but just beneath said liquid predetermined level at least within the top one-half of the liquid; and means providing a supply of air under pressure to said aeration grid; said seed support being disposed at a predetermined height above said liquid predetermined level; said predetermined height being dependent upon the type of crop to be grown and so calculated that almost all of the root structure of a selected crop will be suspended in the space defined between said seed support member and said liquid predetermined level during growth; said aeration grid thus providing a supply of air bubbles which coalesce and burst at the surface of said liquid to provide a circulation of moisture droplets and moisture laden air about crop roots growing in said defined space; said chamber being sufficiently deep to define a settling tank of liquid undisturbed by action of said aeration grid, whereby any material washed from said seed support member by action of said aeration grid may fall therebeneath by gravity to settle at the bottom of said chamber so that such material is not recirculated onto the growing crop.

4,057,931

STACKABLE FLOWER POT

Kenneth R. Stutelberg, Bloomington, and Dennis C. Anderson, Northfield, both of Minn., assignors to National Polymers, Inc., Lakeville, Minn.

Filed Nov. 20, 1974, Ser. No. 525,580
Int. Cl.[2] A01G 9/02
U.S. Cl. 47—66 8 Claims



1. A flower pot having a side wall with a cylindrical upper edge portion defining an interior opening, and a bottom wall, and means fixedly attached to said flower pot and extending downwardly adjacent the periphery of said bottom wall to provide support members extending parallel to the longitudinal axis thereof for supporting said flower pot on a supporting surface, said support members being spaced apart to define recesses between adjacent support members, said recesses being dimensioned and positioned in relationship to the radius and thickness of the upper edge of said flower pot to adapt said flower pot for being supported by the upper edges of at least two other similar flower pots with at least a separate one of the support members of said first mentioned flower pot extending into the interior of each of two other similar flower pots to prevent said first mentioned flower pot from transversely sliding off the tops of other similar flower pots on which the first mentioned flower pot is supported.

4,057,932

CONTAINER FOR SEEDLINGS

Henry Anderson Spencer, 8005-137th St., Edmonton, Alberta, Canada (T5R0C1)

Continuation-in-part of Ser. No. 538,540, Jan. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 445,443, Feb. 25, 1974, abandoned, which is a continuation of Ser. No. 250,994, May 9, 1972, abandoned, which is a continuation-in-part of Ser. No. 126,605, March 22, 1971, abandoned. This application Oct. 1, 1976, Ser. No. 728,640
Int. Cl.[2] A01G 9/02
U.S. Cl. 47—77 27 Claims

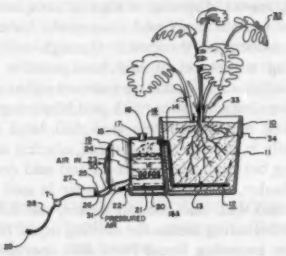
1. A container for growing seedlings, said container being normally upstanding when in use and comprising: a pair of first and second wall members, each formed of thin-walled, flexible, substantially non-porous sheet plastic, each said wall member comprising a series of spaced, inwardly-projecting, elongate shoulders integrally joined by webs, the shoulders of the first wall member being mutually opposed relative to the shoulders of the second wall member, said mutually opposed shoulders being provided with inter-engaging means, whereby when the wall members are pressed together, a series of open-topped cells are formed, defined by the shoulders and their connecting webs and closed along the greatest part of their length; said shoulders and webs combining to form a series of parallel, inwardly-directed, relatively broad, deep grooves within said shoulders, said grooves extending perpendicularly downwardly from the wall members' upper edge portions; the lower end portions of each pair of opposed webs and integrally joined shoulders combining to form the base of each cell, within which is formed an aperture, said aperture being smaller than the aperture at the top of the cell; said webs constituting the predominant portion of the side walls of the container, and each pair of opposed webs forming the side walls of an individual cell of said series of cells; each said web being corrugated longitudinally of said cell, the grooves of the corrugations on the interior side walls of each said cell extending downwardly directly toward the base aperture and constituting a series of root grooves for directing root growth toward said aperture; and hinge means connecting the wall members at their lower ends.

4,057,933

APPARATUS FOR AERATING COMMINUTED MATTER SUCH AS SOIL

Lyle F. Enyeart, 802 16th Ave., Scottsbluff, Nebr. 69361

Filed May 5, 1976, Ser. No. 683,258
Int. Cl.[2] A01G 9/24, 31/02
U.S. Cl. 47—79 3 Claims



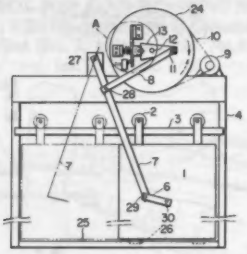
1. In combination, a plant container for receiving comminuted material to surround and support the root system of a plant; an air compressor having a pressurized air outlet; a separate normally-closed water container partially filled with water and having a base and receiving said pressurized air outlet beneath the water container's water level and proximate said base, said water container including a separate outlet means above the water level and extending into said plant container for conveying water-entrained air from said water container to said plant container at a position below the top and above the bottom of said material when said plant container is filled; an externally connectable heating element disposed within said water container beneath said water level; and removable solid closure means for facilitating filling of said water container.

4,057,934

PROTECTION SYSTEM FOR AUTOMATICALLY OPENABLE AND CLOSABLE DOOR

Isao Okubo, Katsuta; Takayoshi Ito, Naka, and Norihiko Mitsui, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 564,220, April 1, 1975, abandoned. This application Oct. 8, 1976, Ser. No. 730,853
Claims priority, application Japan, Apr. 5, 1974, 49-37898
Int. Cl.[2] E05F *15/20*; B66B *13/24*
U.S. Cl. 49—28 5 Claims



1. A protection system for an automatically openable and closable door comprising:

driving means for opening and closing said door;

means for producing a driving force;

means for transmitting said driving force from said driving force producing means to a part of said driving means through a coupling by a frictional force in a normal condition wherein no external force is exerted for obstructing the door throughout at least one of the entire opening and closing operations, a relative displacement being caused in said driving force transmitting means in response to an abnormal condition wherein an external force is exerted on said door obstructing at least one of the opening and closing operations of said door and the output driving force from said driving means exceeds a driving force which is required to at least one of open and close said door in said normal condition, said driving force transmitting means being responsive to the abnormal condition in the door opening operation;

means for detecting the relative displacement caused in said driving force transmitting means; and

means for controlling movement of said door for stopping or for stopping and then reversing the at least one of opening and closing operations of said door by controlling said driving force producing means in response to the actuation of said relative displacement detecting means.

4,057,935

QUICK RELEASE MECHANISM FOR WINDOW GUARD OR THE LIKE

Rod G. Rohrberg, Torrance; Henry Patrick Trentz, Lomita, and Victor Herbert Ziegler, Torrance, all of Calif., assignors to Rod G. Rohrberg and Henry P. Trentz, both of Torrance, Calif.

Filed Feb. 3, 1977, Ser. No. 765,199
Int. Cl.[2] E06B *9/02*; E05C *3/28*
U.S. Cl. 49—56 12 Claims

1. A quick release latching device for releasably securing a guard to a wall surrounding an opening in said wall, comprising:

a tube member supported on said wall and extending between inner and outer portions of said wall,

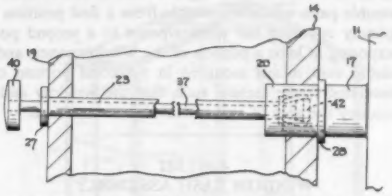
a sleeve member mounted on an outer portion of said wall and attached to said tube member near one end of said tube member,

a rod member slidably mounted within the tube member and extending from a point beyond the inner surface of said wall to a point within said sleeve member,

a latching member attached to the end of said rod member extending within said sleeve member,

manually operable actuator member attached to the end of said rod member extending beyond the inner surface of said wall,

a resilient retainer collet attached to said one end of said tube member proximate to where the sleeve member is attached thereto, and



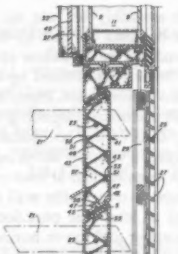
retainer means attached to said guard and having a receptacle formed therein for receiving said retainer collet, said latching member forcing said collet against the inner wall of said receptacle to secure the sleeve member to the receptacle when the device is in the latched condition, said sleeve member being released from the receptacle when the actuator member is depressed towards the inner wall surface to draw the latching member away from the collet.

4,057,936

THERMALLY INSULATED WINDOW SYSTEM

William Burk Wyatt, Jr., Nashville, Tenn., and Bruce D. Benefield, Huntsville, Ala., assignors to Videre Corporation, Nashville, Tenn.

Continuation-in-part of Ser. No. 765,280, Feb. 3, 1977. This application Mar. 11, 1977, Ser. No. 776,609
Int. Cl.[2] E05B *65/04*
U.S. Cl. 49—61 6 Claims



1. An insulated window system, for use in windows or doors, completely sealable by insulated panel members comprising:

an insulated frame section comprising a plurality of thermal break panel members, each panel member comprising

a pair of spaced channel-shaped sections having inwardly extending flanges along both sides thereof, facing each other,

a rigid plastic sheet of serrated cross-section situate between said channels and contacting the inner surface of each of said channels,

said plastic sheet having means thereon to contact the flanges of both of said channels to bind the channels

together and seal the spacing therebetween to provide a closed shell, and

foamed-in-place, expanded, closed-cell foamed polymeric material filling and monolithically sealing said shell to form the panel member; a double-pane window mounted within a first portion of the insulated frame section;

shutter sections attached adjacent the inner surface of the double-pane window movable from a first position completely covering the windowpanes to a second position exposing at least a portion of the windowpanes; and

sealable vent means mounted in a second portion of the insulated frame section such that the window and vent occupy the area of said insulated frame section.

4,057,937
WINDOW SASH ASSEMBLY

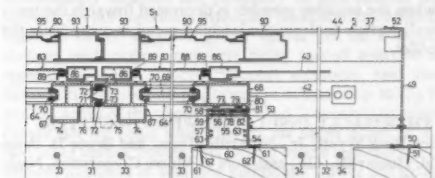
Yoshihiro Nakamura, Shizuoka, Japan, assignor to Riken Keikinzoku Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed June 1, 1976, Ser. No. 691,829

Claims priority, application Japan, May 30, 1975, 50-74074; Feb. 3, 1976, 51-11646

Int. Cl.² E05F *11/38*

U.S. Cl. 49—372 **13 Claims**



1. A window sash assembly for use on an exterior wall surface at a window opening defined by an upper lintel, a lower sill and side members, said window sash assembly comprising a rectangular framework formed by an upper horizontal frame member, a lower horizontal frame member and a pair of vertical side frame members extending between and engaged with the outer ends of the horizontal frame members, said framework including a window covering portion adapted to overlie the window opening and at least one window panel housing portion adapted to overlie the wall surface beside the window opening, and at least one partition pillar vertically oriented between the upper and lower horizontal frame member and defining, to the opposite sides thereof, the window covering portion and the window panel housing portion, said frame members and said partition pillar having generally planar inner faces mountable against an exterior wall surface, said upper horizontal frame member including downwardly facing upper slide web means, said lower horizontal frame member including upwardly facing lower slide web means in opposed cooperative relation to said upper slide web means, and at least one window panel positioned between and slidable along said upper and lower slide web means between the window covering portion and the window panel housing portion, the window panel being completely receivable within the window panel housing portion, said partition pillar having an outer face positioned immediately inward of the upper and lower slide web means for movement of the window panel thereacross in sliding between the window covering portion and the housing portion, said window panel, when in the window covering portion, including an outer side frame member overlying the outer face of the partition pillar, and sealing means engaged between the outer face of the partition pillar and the overlying outer side frame member of said window panel.

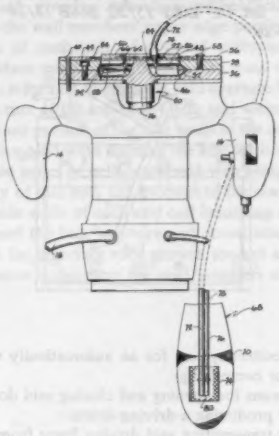
4,057,938
PORTABLE SAND BLASTING DEVICE

John H. Rohlfs, 1955 Torringford West St., Torrington, Conn. 06790

Filed June 17, 1976, Ser. No. 697,013

Int. Cl.² B21J *13/00*

U.S. Cl. 51—429 **29 Claims**



1. A portable sand blasting device comprising a housing adapted to be held and manipulated manually, an electric motor supported by the housing and having a rotatable output shaft, electrical conductor means for connecting the motor to a source of electrical power, a high speed air and sand impeller mounted on the motor output shaft and having inlet and discharge openings respectively for receiving and discharging air and entrained sand and at least one air and sand passageway interconnecting said inlet and discharge openings, at least one additional air inlet opening for said impeller, nozzle means arranged to receive air and entrained sand from said discharge opening and to discharge a high speed stream of air and sand for a blasting operation, a sand receptacle for holding a supply of sand, and air and sand supply conduit means connected between sand in said receptacle and said impeller inlet opening.

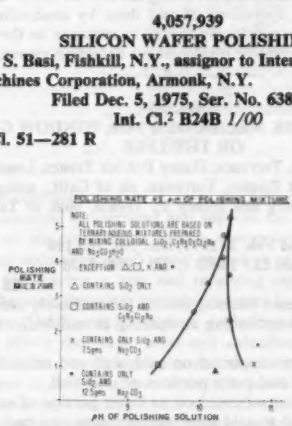
4,057,939
SILICON WAFER POLISHING

Jagtar S. Basi, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1975, Ser. No. 638,018

Int. Cl.² B24B *1/00*

U.S. Cl. 51—281 R **16 Claims**



1. A reagent composition for polishing substrates comprising an aqueous mixture of silicon dioxide particles in a size range of about 5 to about 200 millimicrons, a soluble alkali metal base and an oxidizing agent selected from the group consisting of

sodium and potassium salts of dihaloisocyanuric acid, wherein the ratio of said base to said oxidizing agent is in the range of about 05:1 to about 3.2:1, and with the ratio of silicon particles to said base in the range of about 8.5:1 to about 55.6:1.

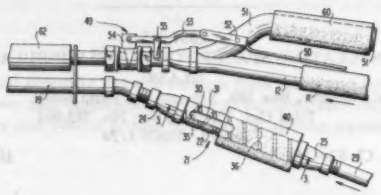
9. A process for polishing crystalline silicon which comprises applying to a surface of said silicon a polishing composition of claim 1, and polishing said silicon therewith.

4,057,940

CONTROL FOR SAND BLASTING NOZZLE

Otto Wemmer, 3710 Greenbriar Drive, Columbia, S.C. 29206

Filed Dec. 2, 1976, Ser. No. 746,939
Int. Cl.² B24C 7/00
U.S. Cl. 51—438 8 Claims



1. In a sand blasting apparatus having a blasting fluid supply, a discharge nozzle with a suction inducing means and a grit delivery conduit leading from a supply of grit to the suction inducing means of said sand blasting nozzle, a valve assembly positioned in said grit conduit between said suction inducing means and said grit supply and comprising an elongated valve body having a cylindrical wall disposed about the longitudinal axis thereof to define a passage extending therethrough, said valve body being connected in said conduit with said passage in line therewith; a smooth outer surface around the periphery of said valve body defining a cylindrical valve seat exposed to the atmosphere; spiral thread means on the cylindrical surface of said seat; an aperture extending along said seat and through said wall to provide an opening between the atmosphere and said passage; and a resilient deformable cylindrical sleeve carried on said body and surrounding a portion of said valve seat, the inner portion of said sleeve being deformed by engaging said thread means and said sleeve being arranged for longitudinal movement along said seat surface between a first position to cover and seal said aperture and a second position to uncover said aperture and expose said passage to the atmosphere upon rotation of said sleeve in contact with said thread means, thereby adjustably controlling the degree of suction induced in the grit delivery conduit by the suction inducing means of said nozzle.

4,057,941

MODULAR GREEN HOUSE CONSTRUCTION

Seymour L. Schwartz, North Hollywood, Calif., assignor to Airflow Aluminum Awning Company, Gardena, Calif.

Filed Dec. 19, 1975, Ser. No. 642,418
Int. Cl.² E04B 1/12, 7/02
U.S. Cl. 52—63 9 Claims

1. A modular building construction comprising:

a plurality of panels having a frame formed of a universal beam comprised of:

an elongate substantially hollow beam having a substantially rectangular cross section;

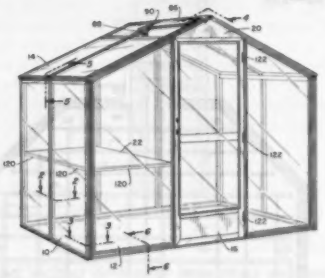
a pair of outwardly facing, mirror image, continuous slots on opposite sides of said beam for interlocking adjacent beams when their sides are in abutment;

an outward facing, ribbed channels on a third side of said beam for forming a continuous, peripheral, screw-receiving channel when a plurality of said beams are formed into panel frames;

cover securing means on a fourth side of said beam for securing a panel covering,

interlocking means for interlocking the mirror image slots of abutting universal beams to form walls and a ceiling;

capping bracket means for sliding over and capping said frames for joining adjacent walls to form corners;



said capping bracket having a flange extending over the rib channel for securing adjacent panels; and

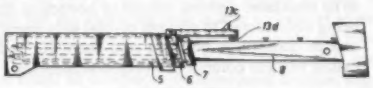
a substantially transparent material stretched across and secured to said cover securing means for enclosing said modular building.

4,057,942

TELESCOPIC BOOM WITH HYDRAULIC ACTUATING MECHANISM

Wilhelm Kranefeld, Wetter, and Helmut Schneider, Kamen-Methler, both of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Germany

Filed May 3, 1976, Ser. No. 682,645
Claims priority, application Germany, May 2, 1975, 2519558
Int. Cl.² B66C 23/04
U.S. Cl. 52—115 3 Claims



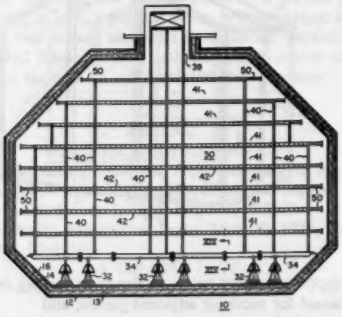
1. A telescopic boom for movable cranes, which includes in combination: at least one hydraulically displaceable telescopic slide, bearing means connected to said hydraulically displaceable slide, at least one mechanically displaceable telescopic slide, a holding bar for operatively pushing out and retracting said at least one mechanically displaceable telescopic slide, said holding bar having a free end portion with a pushing member and with a pulling member offset by 180° with regard to said pushing member, said holding bar having its other end portion provided with transverse bolt means for engagement with said bearing means, and multiple dovetail-shaped cam means connected transversely to direction of actuation of said at least one mechanically displaceable telescopic slide and spaced from each other in the axial direction of said at least one mechanically displaceable telescopic slide.

4,057,943

MODULAR SCAFFOLDING FOR ASSEMBLING THE INSIDE OF AN LNG VESSEL

Robert W. Lienhard, Pittsburgh, Pa., assignor to Swiss Fabricating, Inc., Pittsburgh, Pa.

Filed Feb. 23, 1976, Ser. No. 659,991
Int. Cl.[2] E04G 3/02, 11/04
U.S. Cl. 52—126 11 Claims



1. Scaffolding apparatus, for use in finishing the interior of an LNG vessel which has a top, bottom and sides, comprising:

a base spaced apart from the bottom of the LNG vessel;

a plurality of adjustable supports disposed between said base and the bottom of the LNG vessel for supporting said base from the bottom of the LNG vessel;

a plurality of vertical columns supported from and extending upward from said base and each of said plurality of vertical columns being formed from a plurality of vertical members;

a plurality of spaced apart horizontal levels each supported only from said plurality of vertical columns and dividing the inside of the LNG vessel into a number of horizontal levels;

each horizontal level comprises a plurality of horizontal members connected to and supported from some of said plurality of vertical columns;

a plurality of adjustable horizontal outriggers, disposed around the periphery of each horizontal level for varying the area defined by each horizontal level, some of said outriggers connected to some of said plurality of vertical columns and the rest of said outriggers connected to some of said horizontal members; and,

outrigger connecting means for connecting each outrigger to its associated vertical column or horizontal member and being constructed to prevent pivotal movement about the axis of connection between said outrigger and the associated vertical column or horizontal member.

4,057,944

THERMALLY INSULATED PANEL

William Burk Wyatt, Jr., Nashville, Tenn., and Bruce D. Benefield, Huntsville, Ala., assignors to Videre Corporation, Nashville, Tenn.

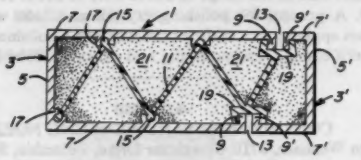
Filed Mar. 11, 1977, Ser. No. 776,610
Int. Cl.[2] E04C 2/40; E04B 3/70
U.S. Cl. 52—309.11 8 Claims

1. A thermally insulated panel member comprising:

a pair of spaced channel-shaped sections having inwardly extending flanges along both sides thereof, facing each other;

a rigid plastic sheet of serrated cross-section situate between said channels and contacting the inner surface of each of said channels;

said plastic sheet having means thereon to contact the flanges of both of said channels to bind the channels together and seal the spacing therebetween to provide a closed shell; and



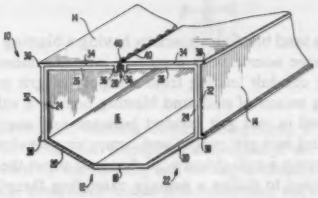
closed-cell foamed polymeric material filling and monolithically sealing said shell to form a panel.

4,057,945

INSULATING SPACER FOR DOUBLE INSULATED GLASS

Gerald Kessler, Box 389, Youngstown, Ohio 44501

Filed Oct. 19, 1976, Ser. No. 733,902
Int. Cl.[2] E06B 3/24
U.S. Cl. 52—398 10 Claims



1. An insulating spacer for precision separation of plates in double insulated glass, comprising:

a metal spacer for interposition between two glass panes, said metal spacer permitting conventional sealant bonding of the glass to the spacer, said metal spacer having a slot running the length thereof; and

insulating means attached to said metal spacer to thermally isolate said metal spacer from the two panes of glass, thereby greatly reducing the heat transfer from one pane of glass to the other through the spacer, said insulating means comprising an elongated plastic element formed of two symmetrical sections, each fitting tightly to a portion of said metal spacer so that each is fixedly held to the metal spacer, and each correspondingly covering at least a portion of one of the two sides of the spacer which contact the glass plates, said two symmetrical sections of said insulator making minimal contact with each other, said sections being separated adjacent the slot of said metal spacer.

4,057,946

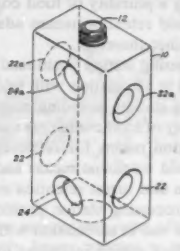
BOTTLE FOR BUILDING CONSTRUCTION

Charles W. Barrett, 47616 N. Shore Drive, Belleville, Mich. 48111

Filed May 18, 1973, Ser. No. 361,469
Int. Cl.[2] B65D 21/02; E04B 1/12; E04C 1/10
U.S. Cl. 52—436 14 Claims

1. An assemblage of at least two bottles of generally rectangular cross section having a pair of generally flat opposite side surfaces devoid of projections, said bottles being arranged in end-to-end relationship one of said bottles having a top end having a short uncapped filling neck of predetermined length projecting therefrom, the other of said bottles having a bottom end having a tapered indentation of a depth which is less than said predetermined length of said neck by a mortar joint thickness and which receives the end of said uncapped neck of said one of said bottles, said indentation also having abutment

surfaces for engagement by the top side edge of said uncapped neck and which include outwardly tapered side surface portions which when said bottles are not centered will engage the edge of said uncapped neck and move the bottles laterally to



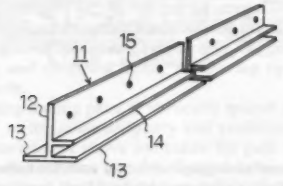
bring said generally flat side surfaces flush when said neck is slid down said tapered side abutment surfaces, and material between said bottles in said mortar joint spacing simulating mortar.

4,057,947

JOINING AND FIXING STRUCTURE FOR CEILING BOARDS AND PANELLING

Kunimasa Oide, 3-33, Seiwadai-nishi-1, Kawanishi, Hyogo, Japan

Filed Mar. 9, 1976, Ser. No. 665,199
Claims priority, application Japan, Mar. 17, 1975, 50-32586
Int. Cl.² E04B *5/52*
U.S. Cl. 52—496 **6 Claims**



1. Means for forming a planar surface comprising a plurality of substantially parallel base members spaced apart and parallel to said surface, each of said members being provided with a joining device,

each said joining device comprising a substantially flat upstanding plate portion adjacent one side of each of said base members and affixed thereto, an engaging plate substantially perpendicular to said upstanding plate and extending on either side of the edge of said upstanding plate remote from said base members,

a plurality of substantially flat members adapted to form said surface and having slits corresponding to said engaging plate, said engaging plate in said slits, whereby said flat members are securely joined in an end-to-end relationship,

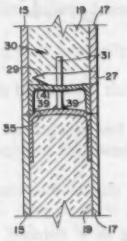
each said joining device being provided with a rib flange perpendicular to said upstanding plate and extending outwardly from one side of said upstanding plate, said flange being parallel to said engaging plate and spaced therefrom by a distance substantially equal to the thickness of said flat members from said surface to said slits.

4,057,948

LOCKING DEVICE

William D. Wise, Box 29, Genoa, Nev. 89411

Filed June 17, 1976, Ser. No. 696,890
Int. Cl.² E04C *1/10*
U.S. Cl. 52—582 **5 Claims**



1. A panel locking device for assembling and interlocking two double walled, bonded core, structural panels of the kind which exhibit a substantial amount of thermal expansion and contraction in normal installed use and wherein said locking device provides the interlocking along the adjoining edges of the panels by structurally integrating the locking device within the two panels, said locking device comprising,

a first panel comprising two spaced outer covers an inner core bonded to the outer covers, and a perimeter frame means

a second panel comprising two spaced outer covers an inner core bonded to the outer covers, and a perimeter frame means,

said first perimeter frame means comprising a first relatively rigid but elastically deflectable male web and a lug connected to the web at one end of the lug and having an outwardly projecting end with a pin receiving and panel aligning hole extending through the outer end of the lug,

said second perimeter means comprising a female channel having two flanges and a second relatively rigid but elastically deflectable web between the flanges and formed with a lug receiving slot extending through the web,

an aligning and locking pin having a tapered tip,

and wherein a pair of the pin receiving hole in the lug is so located as to permit initial entry of the tapered tip of the pin into the pin receiving hole along the backside of the female web when the two panels are aligned in initial edge contact with the edges of the female channel flanges engaged with the male web and with the lug extending through the slot in the web of the female channel and wherein the pin receiving hole is also so located so as to require sufficient elastic deflection of the male and female webs as to retain the panels tightly locked together under tension under all conditions of subsequent thermal expansion and contraction of the bonded cores and structural panels when the pin is driven into the hole up to the full diameter of the pin.

4,057,949

BAGGING METHODS

Maurice F. Greffe, Meylan, France, assignor to Societe des Brevets Greffe, Meylan, France

Filed Nov. 19, 1976, Ser. No. 743,300
Claims priority, application France, Dec. 22, 1975, 75.39237
Int. Cl.² B65B *31/02*
U.S. Cl. 53—22 B **12 Claims**

1. A method of bagging material in a bag to reduce the quantity of air trapped in the bag comprising the steps of:

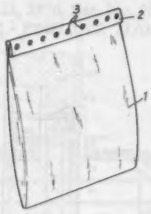
filling a quantity of material in the bag,

forming a closure for the previously filled bag by

a. first bringing the lips of the bag opening together and

folding the lips over on themselves to form a fold area and,

b. then providing a plurality of seals spaced apart along the fold area



subjecting the bag to a reduced pressure to deaerate it through the closure, and

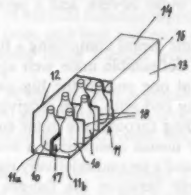
subjecting the bag to atmospheric pressure, the said closure forming an obstacle to the intrusion of the outside gases.

4,057,950

CARDBOARD CONTAINER FOR BOTTLES AND THE LIKE

Heinz Focke, 309 Verden Moorstrasse, Germany

Division of Ser. No. 390,263, Aug. 21, 1973, Pat. No. 3,937,391.
This application Nov. 18, 1975, Ser. No. 633,136
Claims priority, application Germany, Oct. 23, 1969, 1953350
Int. Cl.[2] B65B *21/06*
U.S. Cl. 53—26 **1 Claim**



1. A process for inserting a double row of articles such as bottles, cans or the like into a container and preparing said container from a unitary blank having integral top, side, bottom and end walls, wherein said bottom wall is formed of two portions of the blank on opposite sides thereof with a flap co-extensive in length with each bottom portion and from at least one cross-piece provided with a slit which is adapted to be placed in a form locking manner on a central longitudinal piece formed from said flaps, comprising positioning said rows of articles with each row disposed upright in oppositely slanting positions adjacent each other at the top, placing said cross-piece between adjacent articles in the row adjacent the tops of the articles, folding the unitary blank about the two rows of articles while the articles are disposed in the oppositely slanted position, and extending the flaps upwardly between said rows, bringing the separated rows of articles together and lowering the cross-pieces over the longitudinal central piece defined by said flaps.

4,057,951

PACKAGING MACHINE

Walter Max Schneider, Lansing, Ill., assignor to Land O'Frost Inc., Lansing, Ill.

Filed Jan. 28, 1977, Ser. No. 763,297
Int. Cl.[2] B65B *57/06, 57/12, 31/02*
U.S. Cl. 53—55 **42 Claims**

1. A multi-station packaging device for automatically packing a portion of a food product into a food container and performing all subsequent operations including filling, purging, and sealing the food container, and discharging the filled food container for further handling, comprising in combination,

a support table,

a turret mounted on said support table,

said turret including a plurality of food container retention means, each of said retention means adapted to retain a single food container thereon,

at least a first processing station positioned adjacent to said support table and in association with said turret,

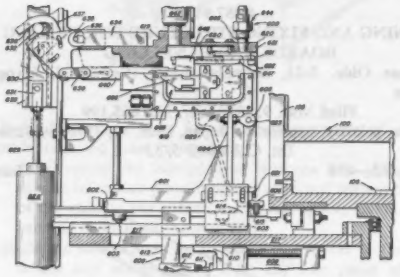
said first processing station including magazine means for carrying a plurality of food containers therein, and further including deposition means for retrieving a single food container from said magazine means and depositing said food container on said turret retention means,

at least a second processing station positioned adjacent to said support table and in association with said turret,

said second processing station including loading means for loading a pre-determined portion of a food product into said single food container,

at least a third processing station positioned adjacent to said support table and in association with said turret,

said third processing station including vacuum means positioned in operative cooperation with said corresponding retention means of said turret thereby to create vacuum environment surrounding said filled food container,



purging means associated with said vacuum means for purging said food container with said food product contained therein,

sealing means associated with said vacuum means for simultaneously sealing said food container while said food container and contained food product is in the purged condition and under vacuum conditions,

discharge means for effecting the discharge of said food container with said food product contained therein from said retention means of said turret for further handling,

and indexing means for effecting an indexing function between said turret relative to each of said processing stations such that said food container may be consecutively processed at each of said processing stations,

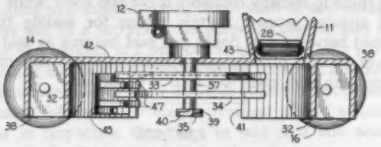
whereby said packaging machine may be operated on an automatic and continuous basis to remove a single food container from said magazine means and position the same on said turret retention means, and said indexing means operating to effect a relative indexing function to occur such that said food container is consecutively processed at each consecutive food processing station to provide a filled, purged and sealed food container and discharging said food container from said retention means for further handling.

4,057,952

ROTARY MOWER AND SHREDDER DEVICE

George K. Brokaw, 110 Forest Lane, Berkeley, Calif. 94708

Filed Jan. 19, 1976, Ser. No. 650,508
Int. Cl.[2] A01D *35/264*
U.S. Cl. 56—16.9 2 Claims



1. A rotary lawn mower apparatus adapted to cut and shred light and relatively heavy articles as well as cutting grass, comprising:

a housing mounted on wheels so as to be close to the ground, and including a horizontal upper wall and an open bottom;

an opening in said horizontal upper wall of the housing;

a hopper mounted on the upper side of the housing over said opening;

roller-type feeding means mounted on the hopper for feeding material from the hopper down through the opening into the housing, including relatively heavy articles;

a vertically oriented, motor driven shaft extending substantially through the height of the housing and mounted for rotation within the housing;

a cutting and chopping blade in the housing affixed horizontally to the shaft close to said horizontal upper wall of the housing, having opposed sharp cutting ends positioned below the housing opening and adapted to cut articles entering the housing from the hopper;

said horizontal upper wall of the housing having bracing means affixed to its under side, at the downstream side of the opening, extending into close proximity with the path of said sharp cutting ends of the cutting and chopping blade, for bracing relatively heavy articles as they enter the housing from the hopper and are engaged by said cutting ends;

a shredding and mulching blade affixed horizontally to the shaft, spaced below and rotationally staggered from the cutting and chopping blade, and having opposed shredding ends;

said housing having pairs of vertically spaced shredder bars affixed to its inside periphery and positioned in registry with one another above and below the path of said shredding ends such that articles engaged between the shredding ends and the shredder bars will be shredded;

a grass mowing blade affixed horizontally to the shaft so as to be close to the ground, spaced below and rotationally staggered from the shredding and mulching blade, and having opposed mowing ends adapted to mow grass when the housing is advanced on its wheels; and

said cutting and chopping blade having a substantially higher moment of inertia about its rotational axis than said mowing blade;

whereby, in addition to cutting grass, the apparatus will cut and shear off organic articles, including relatively heavy articles, as they are fed in from the hopper, and shred them into a fine mulch.

4,057,953

TRIANGULAR LAWN RAKE

William P. Rugg, Greenfield, Mass., assignor to Rugg Manufacturing Company, Greenfield, Mass.

Filed May 14, 1976, Ser. No. 686,583
Int. Cl.[2] A01D *7/00*
U.S. Cl. 56—400.17 13 Claims

1. In a lawn rake,

a. a handle;

b. a triangular spread of teeth,

said teeth, considered progressively from the center to the opposite sides of the spread, being of gradually increasing extent radially from the spread triangle apex,

whereby the projecting of all said teeth is to common tangency with the same straight line or vertical plane transverse or normal to said handle, and thereby for raking cleanly from and close against a laterally straight, vertical edge or surface;

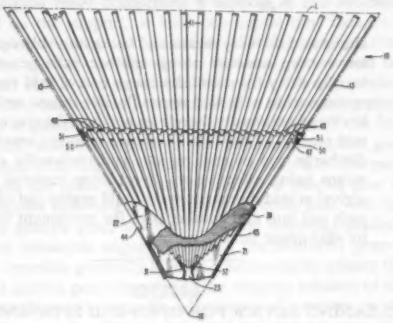
c. downturned working ends integrally formed at the outer ends of said teeth,

said teeth working ends being all of the same vertical extent or height;

d. socket head means for durably and securely joining the inner ends of said teeth to said handle, said socket head means comprising

d_1. flat transverse means individually separately engaging and fixing said teeth inner ends in laterally contiguous, co-planar array and with the backs of said teeth parallel-extending therefrom,

whereby said teeth outer ends also all occupy the same transverse or horizontal plane, and



whereby with their said working ends all of the same height said teeth uniformly engage the lawn surface when swung through all rake use attitudes of handle inclination thereto;

d_2. thin, flat, transverse, light-weight, rigid plate members, engaged to the opposite sides of said teeth spread and flat transverse means, and extending radially beyond the teeth inner ends to supply to said teeth spread a proper balance as between resiliency and stiffness,

said plate members formed also to accommodate the positioning of said teeth inner ends, considered progressively from the center to the opposite sides of said teeth spread, at gradually increasing distances radially from said spread triangle apex, whereby said teeth of said triangular spread project to said same straight transverse line with teeth backs all of the same identical length;

d_3. a receptacle for and mounting therewithin one end of said handle, said receptacle integrally formed in said plate members; and

d_4. means securing together said teeth spread, flat transverse means, and plate members.

4,057,954

MATERIAL LAYER DIVERTING MEANS FOR A CROP MATERIAL ROLL FORMING MACHINE

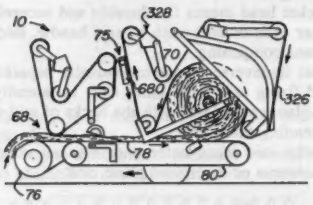
Aquila D. Mast, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Feb. 9, 1976, Ser. No. 656,752
Int. Cl.[2] A01D *39/00*
U.S. Cl. 56—341 10 Claims

1. In a crop material roll forming machine, the combination comprising:

a mobile frame adapted to move across a field;

crop material delivery means supported by said frame above the field;
upper flexible means;
means movably mounting said upper flexible means to said frame above said delivery means to define a roll forming region therebetween having inlet and discharge ends;
said delivery means including means operable to move crop material along one path from said inlet end toward said discharge end of said region;
said upper flexible means having a portion located at said discharge end of said region in closely spaced relationship



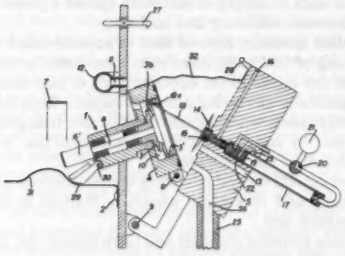
above said delivery means and being movably operable to move crop material along another path generally upwardly away from said discharge end of said region; and
means movable with said upper flexible means and adapted to extend outwardly therefrom and into the space between said portion of the latter and said delivery means at said discharge end of said region, said outwardly extending means being effective to divert crop material upon its arrival at said discharge end of said region out of said one path and into said another path for movement therealong by said upper flexible means.

4,057,955

CLEANING DEVICE FOR OPEN-END SPINNING UNITS

Christian Roehrich, Chaillevette, France, assignor to Nuova San Giorgio S.p.A., Genova-Sestri, Italy

Filed May 27, 1976, Ser. No. 690,624
Claims priority, application Switzerland, June 3, 1975, 7117/75
Int. Cl.[2] D01H *11/00, 1/12*
U.S. Cl. 57—56 **5 Claims**



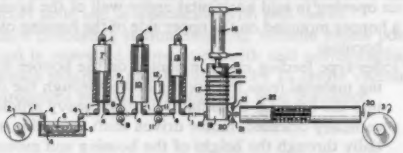
1. A cleaning device for the spinning rotor in an open end spinning unit of the type wherein a portion of the rotor has a fiber collecting groove formed therein, the spinning unit further being of the type where the rotor is carried by a housing and wherein a cover is disposed in a closed position wherein it closes a portion of said housing and is movable in an overturning direction relative to the housing to form a space with said housing, said device comprising means for stopping movement of said cover in said overturning direction for at least partially supporting said cover in a predetermined open position relative to said housing, an axially extending tube mounted on said cover for movement therewith, said tube having first and second end portions, said tube being slidably movable relative to said housing in an axial direction between an advanced position where said first end portion is disposed closely adjacent said annular groove of said rotor and said second end portion is in communication with a source of pressure and a retracted position, said first end portion including baffle means for directing fluid substantially tangentially with respect to said rotor to thereby rotatably drive said rotor while cleaning said annular groove, curtain means for sealing the space formed between said cover and said housing as said housing moves to said predetermined open position, and means for connecting said space to a source of suction.

4,057,956

RUBBER COVERED CABLE

Russell W. Tolle, 4032 Johnson Road, P.O. Box 721, Chanute, Kans. 66720

Filed Mar. 17, 1976, Ser. No. 667,507
Int. Cl.[2] D07B *1/16*
U.S. Cl. 57—164 **8 Claims**



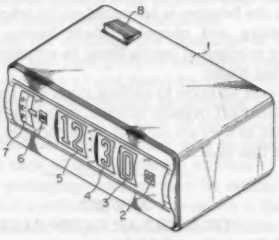
1. A continuous process for producing a steel cable having an outer coating of vulcanized rubber thereon, comprising:
a. applying an outer coating of a vulcanizable rubber compound to the outer surface of a flexible, high tensile strength steel cable to provide a coated cable,
b. pulling said coated cable through a heated die having an inside diameter smaller than the outside diameter of the coated cable, thereby vulcanizing said outer coating and reducing the thickness thereof, whereupon
c. said steel cable is covered with a flexible, continuous, vulcanized outer coating of rubber, and wherein the diameter of the covered cable is significantly less than prior to passage thereof through said die.

4,057,957

ALARM DEVICE OF CLOCKS

Rokusaburo Kimura, Kobe, and Sadashige Horii, Shijonawate, both of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Apr. 8, 1976, Ser. No. 675,162
Int. Cl.[2] G04C *21/16*
U.S. Cl. 58—21.155 **3 Claims**



1. An alarming device of clocks comprising
a drive source; a clock mechanism supported between a pair of opposing base plates to be driven by said drive source and including a time indicating means which is intermittently shifted by means of intermittent rotary shafts rotated intermittently;

an alarm sound source;

a set time indexing wheel rotated about a shaft and shifted in an axial direction of said shaft as actuated by said clock mechanism when a set time is reached;

an actuating lever pivotable respectively in a first plane including said axial direction of the shaft of said indexing wheel and in a second plane perpendicular to said first plane and parallel to a surface of one of said base plates;

a switching means for said alarm sound source comprising a stationary contactor and a movable contactor reciprocally actuated following pivoting movement of said actuating lever in respective directions in said first and second planes; and

a snoozing means for restricting said movements of the actuating lever for a fixed period,

said snoozing means including a snooze cam movable along said second plane and an eccentric rotary shaft formed at an end of one of said intermittent rotary shafts of said clock mechanism, the arrangement being such that said actuating lever pivotally moves along the first plane responsive to said shift of the indexing wheel in said axial direction to switch said switching means into ON-state, the actuating lever is pivotally moved manually along the second plane so as to be restricted by said snoozing means in a position for switching the switching means into OFF-state, and said snooze cam of the snoozing means is shifted in response to said intermittent rotary motions of said eccentric rotary shaft so as to release said restriction of the actuating lever after a predetermined time has lapsed.

4,057,958

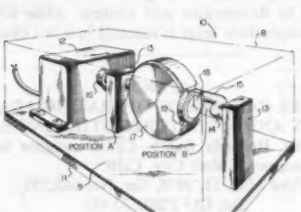
WATCH WINDER

Thomas Wuntch, 10638 Boedeker St., Dallas, Tex. 75230

Filed Sept. 20, 1976, Ser. No. 724,867

Int. Cl.² G04B *3/00*; G04D *3/00*

U.S. Cl. 58—82 R **14 Claims**



1. Apparatus for winding a mechanical self-winding wrist watch having an internal self-winding stem and rotor, said apparatus comprising:

a detachable mandrel adapted for the mounting of a watch thereon;

an eccentric winding shaft rotatably mounted to said mandrel wherein the axes of rotation of the watch supported by said mandrel and that of the stem of the internal self-winding rotor of the watch are coincident with the axis of rotation of said winding shaft;

a catch for securing said mandrel to said eccentric winding shaft; and

means for imparting rotation to said winding shaft and said mandrel attached thereto for the winding of a wrist watch mounted thereon.

4,057,959

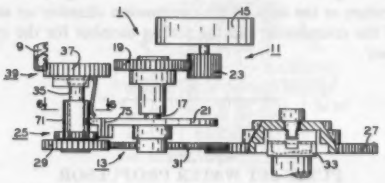
DIGITAL TIMER AND METHOD OF OPERATING SUCH

Gene L. Insley, Rock Falls, and Merle J. Lewis, Morrison, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 464,255, April 25, 1974, Pat. No. 3,898,792. This application Apr. 24, 1975, Ser. No. 571,416

Int. Cl.² G04B *19/02*

U.S. Cl. 58—125 C **14 Claims**



9. A digital timer comprising a support, a rod rotatably mounted on the support, at least one digital time indicating drum mounted on the rod, means for effecting conjoint rotation of the at least one digital time indicating drum with the rod, a gear attached to the rod, another gear drivenly meshed with the first named gear and extending in an operating plane generally angularly disposed with respect to that of the first named gear, a mutilated geneva gear adjacent the other gear and adapted to be intermittently rotated, a clutch device associated with the other gear and the mutilated geneva gear to effect conjoint intermittent rotation of the other gear with the mutilated geneva gear, the clutch device including resilient means for releasable engagement with the mutilated geneva gear and operable generally to at least momentarily release the mutilated geneva gear interrupting the conjoint rotation of the other gear therewith upon the occurrence of a certain condition, and means for driving the mutilated geneva gear in a predetermined time sequence including a rotatable impulse segment, means on the impulse segment for driving engagement with the mutilated geneva gear to effect the intermittent rotation thereof only during a predetermined portion of each revolution of the impulse segment, a timing motor, and a gear train drivingly connected between the timing motor and the impulse segment.

4,057,960

CONTROL SYSTEM FOR GAS TURBINES

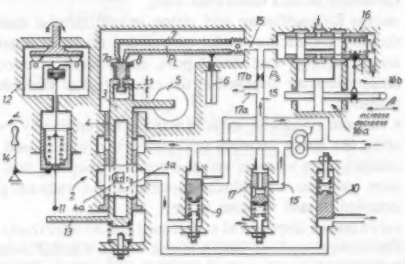
Reinhold Werner, Oberursel, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed May 24, 1976, Ser. No. 689,339

Claims priority, application Germany, May 24, 1975, 2523078

Int. Cl.² F02C *9/08*

U.S. Cl. 60—39.03 **15 Claims**



15. A method of controlling a gas turbine having power take-off means with a gas generator comprising a compressor, a combustion chamber, and a compressor turbine, which tur-

bine also includes a fuel metering valve and means for controlling the cross section of said fuel metering valve in conformity with values of condition of state of the gas generator, which includes in combination the steps of employing as values of condition of state for adjusting the fuel metering valve first the temperature at the inlet to the combustion chamber and alternately at the exit of the compressor, and finally effecting the adjustment of the through-put of the power take-off means dependent upon the difference in the measuring value of the temperature at the inlet to the combustion chamber or at the exit of the compressor and the setting member for the speed governor.

4,057,961

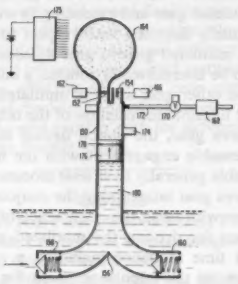
PULSE-JET WATER PROPULSOR

Peter R. Payne, Rte. 5, Box 282, Annapolis, Md. 21401

Continuation-in-part of Ser. No. 358,232, May 8, 1973, Pat. No. 3,898,800. This application May 22, 1975, Ser. No. 580,096

Int. Cl.² B63H *11/06*

U.S. Cl. 60—221 **1 Claim**



1. A water pulse-jet engine comprising:

a. a tubular member, said tubular member being closed at one end and open at the other end to a source of water such that the water has access to said tubular member;

b. said open end having a bifurcated duct with inlet and outlet ports and valve means associated with each of said ports;

c. a piston disposed in said tubular member to urge said water out of said outlet port during movement in one direction in said tubular member and permitting water to flow into said tubular member during movement in the opposite direction, said valve means being coordinated with the movement of said piston by internal pressure variations in said bifurcated duct;

d. means for oscillating said piston in said tubular member thereby producing useful power by the movement of water through said outlet port, comprising a source of compressed air disposed at the closed end of said tubular member;

e. a vacuum system for initially starting the engine by evacuating the space between said piston and said closed end, comprising a vacuum valve, a conduit coupling said vacuum valve to said tubular member and a vacuum pump coupled to said vacuum valve;

f. valve means disposed at said closed end to selectively gate the compressed air into and out of the tubular member; and

g. a liquid level sensor positioned in said tubular member, said liquid level sensor controlling the operation of said vacuum system in response to increased liquid level in said tubular member.

4,057,962

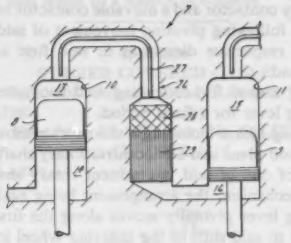
DEVICE FOR DECREASING THE START-UP TIME FOR STIRLING ENGINES

Richard C. Belaire, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1976, Ser. No. 748,264

Int. Cl.² F02G *1/04*

U.S. Cl. 60—526 **4 Claims**



1. A closed fluid working circuit for a regenerative type Stirling engine having a conventional electrical circuit and system for starting, the closed fluid working circuit having a plurality of chambers subdivided by double-acting pistons operating therein, the subdivided chambers being respectively hot and cold and connected in series whereby a hot chamber is always in communication with a cold chamber of the next most adjacent cylinder, said intercommunication between adjacent cylinders containing a foraminous regenerator matrix and a cooling mechanism, the improvement comprising:

a. means defining an electrical heating element invested within said regenerator matrix, said element extending throughout a zone of said regenerator matrix to effect raising the temperature of said regenerator matrix to a temperature level substantially above a predetermined mean operating temperature within a predetermined period of time, measured from when said element is energized, and

b. control means effective to energize the electrical element upon closing of the starting circuit of said engine and effective to de-energize said element when a predetermined temperature level is reached in a hot chamber.

4,057,963

HEAT PIPE CAPABLE OF OPERATING AGAINST GRAVITY AND STRUCTURES UTILIZING SAME

Algerd Basiulis, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 11, 1976, Ser. No. 665,757

Int. Cl.² F28D *15/00*

U.S. Cl. 60—641 **9 Claims**

1. A heat pipe capable of operating against gravity comprising:

means for defining a heat pipe envelope;

means for defining a working fluid in said envelope means;

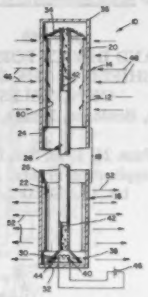
means for defining evaporator and condenser sections in said envelope means with means therein for exerting capillary attraction on said working fluid means in its liquid state, said evaporator means being gravitationally higher than said condenser means;

means in said envelope means for maintaining a physical separation between said capillary attraction means of said evaporator and condenser section means;

means for defining a conduit coupled between said evaporator and condenser section means for said working fluid means in its liquid state; and

means producing bubbles for transporting said working fluid means in its liquid state through said conduit means from said condensing section means to said evaporator section means.

4. A heat pipe as in claim 1 wherein said bubble producing means comprises a heater element coupled to a low power, high temperature electric power supply for enabling the bubbles to form at said heater element, to rise to the top of said conduit means, and to carry therewith small amounts of said working fluid means in its liquid state.

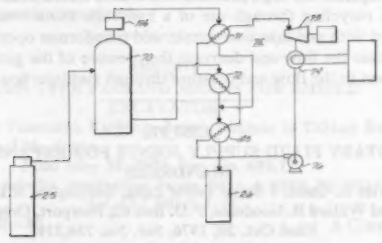


4,057,964

WORKING FLUIDS AND SYSTEMS FOR RECOVERING GEOTHERMAL OR WASTE HEAT

Arthur J. L. Hutchinson, Pasadena, Calif., assignor to Geothermal Investment Co., South Pasadena, Calif.

Continuation-in-part of Ser. No. 565,942, April 7, 1975, abandoned, which is a continuation of Ser. No. 449,220, March 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 301,056, Oct. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 195,154, Nov. 3, 1971, abandoned. This application Aug. 24, 1976, Ser. No. 717,096
Int. Cl.² F03G 7/00
U.S. Cl. 60—641 6 Claims



1. A process for converting naturally occurring heat energy from within the earth carried by a hot fluid consisting of steam and water to mechanical energy comprising the steps of:

flashing a portion of the fluid to steam;

recovering the heat energy in the steam;

passing the water in heat exchange relationship with an operating fluid having a critical temperature below the input temperature of the water;

superheating the operating fluid with the heat from the water;

expanding the operating fluid in a power extracting gas expansion device;

condensing the operating fluid after extraction; and

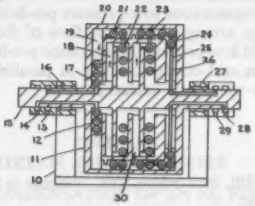
repeating the steps in a continuous process.

4,057,965

THERMODYNAMIC MACHINE WITH STEP TYPE HEAT ADDITION

Michael Eskeli, 7994-41 Locke Lane, Houston, Tex. 77042

Continuation-in-part of Ser. No. 600,312, July 30, 1975, Pat. No. 3,986,361, and a continuation-in-part of Ser. No. 675,304, April 9, 1976. This application July 6, 1976, Ser. No. 703,097
Int. Cl.² F02C 1/04
U.S. Cl. 60—650 9 Claims



1. In a thermodynamic machine, wherein a working fluid is compressed and expanded in a cycle, with the compression being provided within an outwardly extending rotor passage and the expansion is being provided within an inwardly extending rotor passage, the outward and the inward ends of said passages being connected by fluid passages to form a continuous working fluid circulation loop, said circulation loop being provided with a heat removal heat exchanger, a heat addition heat exchanger and a regenerative heat exchanger to exchange heat between two streams of the working fluid, the improvement comprising:

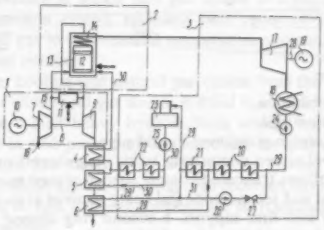
a. providing said regenerative heat exchanger for its heat addition with heat addition steps comprising at least one outwardly extending and at least one inwardly extending fluid passage means, and a heat exchange means to add heat into the working fluid simultaneously with work exchange by the working fluid with the fluid passage means.

4,057,966

STEAM-GAS POWER PLANT

Evgeny Nikolaevich Prutkovsky, ulitsa Kronshtadskaya, 24, kv. 24; Mikhail Albertovich Bermatov, ulitsa Bukharestskaya, 33, korpus 2, kv. 192; Evgeny Alexandrovich Tarasov, ulitsa Kapitana Voronina, 8, kv. 4; Valery Ilich Ozerov, ulitsa Savushkina, 26, kv. 7, all of Leningrad; Alexandr Fedorovich Fedosjuk, ulitsa Pavlova, 13, kv. 28, and Vladimir Andreevich Krokhin, ulitsa Mendeleeva, 34, kv. 4, both of Nevinnomyssk Stavropolskogo kraya, all of U.S.S.R.

Filed Aug. 12, 1975, Ser. No. 604,077
Int. Cl.² F02C 7/02; F01K 7/34
U.S. Cl. 60—678 6 Claims



1. A steam-gas power plant comprising: a condensate line; a condenser in said line, a pump in said line downstream of the condenser, a low-pressure gas-water heat exchanger for heating the condensate; a line of outlet of the condensate from said low-pressure gas-water heat exchanger; low-pressure regeneration pre-heaters connected in series in said condensate line,

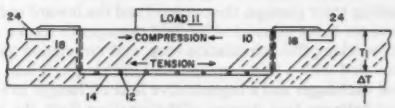
some of said low-pressure regeneration preheaters being connected in said condensate line in parallel with said low-pressure gas-water heat exchanger; a line of inlet of the condensate into said regeneration low-pressure pre-heaters; means for preventing boiling of the condensate in said low-pressure gas-water heat exchanger, including a main having one end thereof connected to said line of outlet of the condensate from said low-pressure pressure gas-water heat exchanger and the other end thereof connected to said line of inlet of the condensate into one of said regeneration low-pressure pre-heaters downstream of said pump, arranged along the flow of the condensate upstream of said low-pressure regeneration pre-heaters which are connected in said condensate line in parallel with said low-pressure gas-water heat exchanger.

4,057,967

REINFORCED ICE MATRIX

William L. Hill, Richardson, Tex., assignor to Suntech, Inc., St. Davids, Pa.

Filed May 14, 1976, Ser. No. 686,625
Int. Cl.² F25D *1/00*
U.S. Cl. 61—1 R **12 Claims**



1. An ice matrix designed to increase the load bearing capacity of an ice sheet and comprising:

a. an ice sheet which, upon having a load placed on its surface, forms compressive stresses in its upper half and tensile stresses in its lower half; and

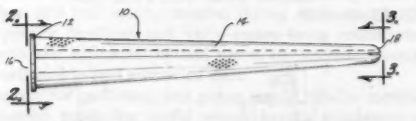
b. a plurality of structural members having substantially all of their lengths which extend in a substantially horizontal direction embedded in the tensile stressed lower half portion of the ice sheet in a substantially horizontal direction to reinforce the ice sheet in tension, thereby increasing the load bearing capacity of the ice sheet.

4,057,968

IRRIGATION GRAVEL GUARD

Robert A. Scott, 1910 Spring Road, Grand Island, Nebr. 68801

Filed Sept. 12, 1974, Ser. No. 505,610
Int. Cl.² E02B *13/00*
U.S. Cl. 61—12 **2 Claims**



1. In combination,

an irrigation pipe,

a gravel screen positioned in said pipe,

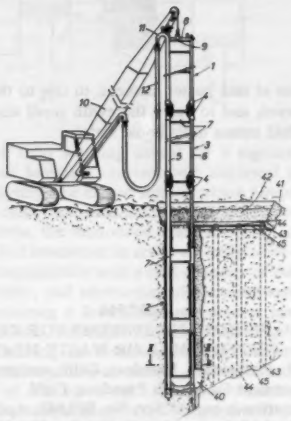
said gravel screen comprising a first ring shaped support, a first hollow, truncated conical shaped screen means having first and second ends and being secured at its said first end to said first support, a second ring shaped support secured to said second end of said first screen means, a third ring shaped support secured to said second support and having substantially the same diameter thereas, a second hollow substantially conical shaped screen means secured to said third support and extending therefrom, said second screen means having first and second ends, said first end of said second screen means being open and being secured to said third support, said second end of said second screen means having a diameter less than said first end thereof, said second end of said second screen means being substantially closed except for perforations extending therethrough.

4,057,969

METHOD AND DEVICE FOR OBTAINING A WATER-TIGHT SHIELD IN THE SOIL WITH THE USE OF NOZZLES

Jacques Rochmann, Boulogne, France, assignor to Soletanche, Paris, France

Filed June 24, 1976, Ser. No. 699,595
Claims priority, application France, July 3, 1975, 75.20921
Int. Cl.² E02D *5/20*
U.S. Cl. 61—35 **18 Claims**



1. In a method for obtaining a water-tight shield in a soil by driving a tool in the soil and injecting a settable grout to disintegrate the soil, the grout being mixed with the disintegrated soil for providing a mortar which after setting will form said shield, the improvement wherein the grout is injected through an injection nozzle with a comparatively low flow rate under a comparatively high pressure and is then mixed with the soil by a recycling through use of a hydraulic transformer associated with said injection nozzle, said transformer operating to increase the flow and decrease the pressure of the grout with respect to the flow and pressure through said injection nozzle.

4,057,970

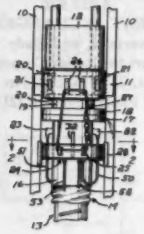
ROTARY FLUID SUPPLY JOINTS FOR EXPANSIBLE MANDRELS

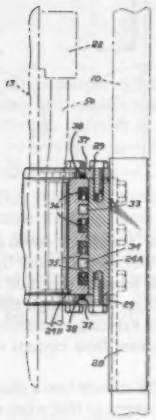
Charles L. Guild, 7 Stone Tower Lane, Barrington, R.I. 02806, and Willard B. Goodman, P.O. Box 62, Newport, Oreg. 97365

Filed Oct. 20, 1976, Ser. No. 734,319
Int. Cl.² E02D *7/30*
U.S. Cl. 61—53.72 **12 Claims**

1. A rotary fluid supply joint to encircle an expansible mandrel below but adjacent the head thereof, the mandrel to be driven by a pile driver having a hoist ring slidable along vertical guide rails, the mandrel of the type having fluid pressure operated means by which the mandrel is expanded from a pile-entering condition into a pile-gripping condition, and conduits in communication therewith, each conduit having a relatively short upper hose section at the upper end of the mandrel and a relatively long lower hose section, both sections externally of the mandrel and the lower section extending to the ground, said joint including inner and outer rings, the inner ring free to turn within the outer ring, said outer ring including shoes for sliding engagement with said rails and means by which it may be attached to and supported by said hoist ring,

said inner ring including means by which it may be connected to the mandrel to turn therewith, each ring including two vertically spaced conduit portions, corresponding conduit portions of the two rings in communication with each other as





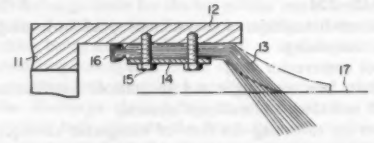
the inner ring turns, each conduit portion of the outer ring having a port to which an appropriate one of the longer hose sections is connectable and each conduit portion of the inner ring having a port to which an appropriate one of the shorter hose sections is connectable.

4,057,971

BRUSH-TYPE PACKING MEANS FOR SHIELD EXCAVATOR

Hironobu Yamazaki, Kashiwa, Japan, assignor to Tekken Kensetu Co. Ltd., Japan

Filed May 25, 1976, Ser. No. 689,724
Claims priority, application Japan, Mar. 4, 1976, 51-22612
Int. Cl.² E01G *5/16*
U.S. Cl. 61—84 **8 Claims**



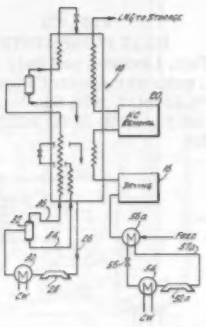
1. A brush-type packing means for a shield tunnel excavator comprising at least two rows of substantially ring-shaped wire brushes respectively made of wires bunched and having a high resiliency and wear resistance and spaced in the longitudinal direction of said excavator providing substantially an annular space therebetween each said ring-shaped brush being secured along the inner periphery of a substantially cylindrical excavator body adjacent the tail end thereof and projected inward at its free end, means for securing said brushes to a position for closing a gap between tunnelled ground surface and peripheral surface of a tunnel wall element inserted in excavated tunnel, and a viscous sealing material impermeable to water and substantially filled in said annular space, said sealing material having a fluidity suitable for permeating into clearances between respective wires of said brush but not passing through the brush.

4,057,972

FRACTIONAL CONDENSATION OF AN NG FEED WITH TWO INDEPENDENT REFRIGERATION CYCLES

Jan A. Sarsten, Millington, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 533,149, Dec. 16, 1974, abandoned, which is a continuation of Ser. No. 397,440, Sept. 14, 1973, abandoned. This application May 3, 1976, Ser. No. 682,331
Int. Cl.² F25J *3/06*
U.S. Cl. 62—23 **4 Claims**



1. A process for the liquefaction of a natural gas stream which may contain heavy hydrocarbons consisting of:

a. cooling said natural gas stream to ambient temperature by heat exchange with ambient temperature surroundings;

b. further cooling said natural gas stream from ambient temperature to below ambient temperature by heat exchange with a first closed cycle refrigeration system to the temperature at which said gas stream is dried, said first refrigeration system rejecting heat received from said natural gas to said ambient temperature surrounding during said cooling;

c. further cooling said natural gas stream from the temperature at which said gas stream is dried to a colder temperature at which heavy hydrocarbons which may be contained in said gas stream are removed, by heat exchange with said first closed cycle refrigeration system, said first refrigeration system rejecting heat received from said gas stream to said ambient temperature surroundings during said cooling;

d. thereafter cooling and liquefying said dried and heavy hydrocarbon removed gas by heat exchange with a second closed cycle refrigeration system having an operating fluid a multi-component refrigerant and said second closed cycle refrigeration system rejecting heat received from said natural gas only to said ambient temperature surroundings and without any heat transfer to said first refrigeration system.

4,057,973

CONSTANT BOILING MIXTURES OF 1-CHLORO-2,2,2-TRIFLUOROETHANE AND 2-CHLOROHEPTAFLUOROPROPANE

Kevin P. Murphy, Orchard Park; Richard F. Stahl, Hamburg, and Sabatino R. Orfeo, Orchard Park, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Dec. 21, 1976, Ser. No. 753,063
Int. Cl.[2] C09K 5/04; F25B 9/00
U.S. Cl. 62—114 4 Claims

1. Constant boiling mixtures consisting essentially of about 29 mole % of 1-chloro-2,2,2-trifluoroethane and about 71 mole % of 2-chloroheptafluoropropane.

4,057,974

CONSTANT BOILING MIXTURES OF 1-CHLORO-2,2,2-TRIFLUOROETHANE AND OCTAFLUOROCYCLOBUTANE

Kevin P. Murphy, Orchard Park; Richard F. Stahl, Hamburg, and Sabatino R. Orfeo, Orchard Park, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Dec. 21, 1976, Ser. No. 753,064
Int. Cl.[2] C09K 5/04; F25B 9/00
U.S. Cl. 62—114 4 Claims

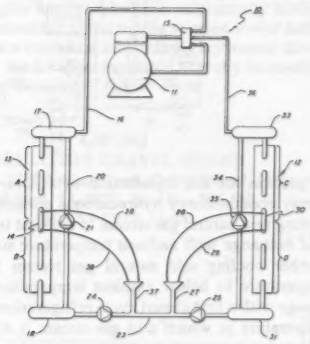
1. Constant boiling mixtures consisting essentially of about 22 mole % of 1-chloro-2,2,2-trifluoroethane and about 78 mole % of octafluorocyclobutane.

4,057,975

HEAT PUMP SYSTEM

James J. del Toro, Liverpool, and Rudy C. Bussjager, Minoa, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 7, 1976, Ser. No. 720,721
Int. Cl.[2] F25B 13/00; B22D 23/00
U.S. Cl. 62—324 6 Claims



1. In a heat pump system having a compressor, a pair of heat exchangers and means for selectively reversing the flow of refrigerant through the system so that the function of the exchangers is also reversed, the improvement comprising

means for separating each exchanger into a plurality of heat transfer zones, each zone containing a number of flow circuits,

flow control means for routing refrigerant discharged from the compressor through each of the zones of one exchanger in a series flow progression and routing the refrigerant discharged from said one exchanger into the other exchanger simultaneously through each of the zones of said other exchanger whereby flow is parallel through the zones, and

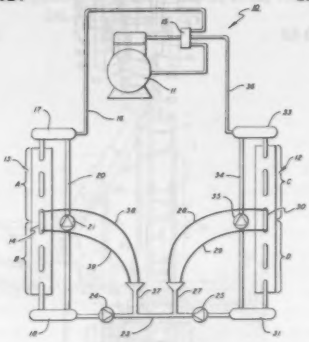
switching means operatively associated with said flow control means for automatically reversing the flow geometry through the exchangers in response to reversing the flow of refrigerant through the system whereby refrigerant flow is parallel through said one exchanger and in series through said other exchanger.

4,057,976

HEAT EXCHANGER

James J. del Toro, Liverpool, and Rudy C. Bussjager, Minoa, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 7, 1976, Ser. No. 720,722
Int. Cl.[2] F25B 13/00; B22D 23/00
U.S. Cl. 62—324 13 Claims



1. A heat exchanger suitable for use in a heat pump wherein the exchanger acts as a condenser when the flow of refrigerant through the exchanger is in one direction and as an evaporator when the flow of refrigerant through the exchanger is in the opposite direction, the exchanger including

one or more refrigerant flow circuits contained within the exchanger,

means to separate the circuits into a plurality of heat transfer zones that are arranged so that when air flows through the heat exchanger, the air flows through the heat transfer zones in parallel, and

control means operatively associated with the last mentioned means for routing refrigerant in series through the heat transfer zones when the flow of refrigerant through the exchanger is in one direction and to route the refrigerant simultaneously through each of the zones when the flow of refrigerant is in the opposite direction.

4,057,977

REVERSE CYCLE HEAT PUMP CIRCUIT

Leo B. Chambless, Tyler, Tex., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 6, 1976, Ser. No. 729,907
Int. Cl.[2] F25B 13/00
U.S. Cl. 62—324 5 Claims

1. A reversible refrigeration system adapted for heating and cooling, comprising:

a motor compressor unit;

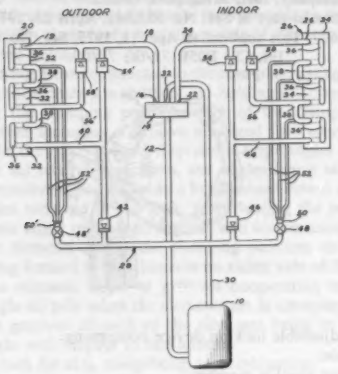
an indoor heat exchanger and an outdoor heat exchanger each including a plurality of circuits;

a valve for reversing the flow of refrigerant through said system to operate said system in a heating or cooling mode with each of said heat exchangers arranged interchangeably as a condenser or as an evaporator;

a conduit interconnecting the outlets of said heat exchangers;

means connecting the circuits in each of said heat exchangers in series between a heat exchanger inlet line and an

outlet line when a heat exchanger operates as a condenser; and



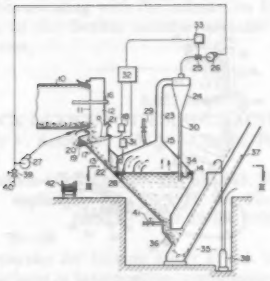
means connecting the circuits in each of said heat exchanger in parallel between said conduit and said reversing valve when a heat exchanger operates as an evaporator.

4,057,978

APPARATUS FOR COOLING PELLETS

Yoshimasa Sato; Toshio Tsukuda, both of Niihama; Hajime Inoue, Abiko, and Akio Mutsuta, Wakayama, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo and Sumitomo Metal Industries, Ltd., Osaka, both of, Japan

Filed Feb. 17, 1976, Ser. No. 658,364
Int. Cl.² F25D *23/12*
U.S. Cl. 62—331 **6 Claims**



1. An apparatus for cooling hot pellets with water, which comprises the combination of

a. a furnace for producing the hot pellets and having a discharge opening for the hot pellets,

b. a discharge chute for the hot pellets, one end of the chute being coupled to the discharge opening and the discharge chute being shielded from the air so as to maintain a non-oxidizing atmosphere in the chute,

c. a cooling bath containing cooling water, the other end of the discharge chute being in communication with the cooling bath whereby the hot pellets are received in the cooling bath from the discharge opening of the furnace through the shielded chute, cooling of the hot pellets in the cooling bath generating vapor,

d. a hood mounted over and covering the cooling bath for gathering the vapor,

e. a gate means at the other end of the discharge chute and arranged to prevent substantial entry of vapor and air from the hood into the chute,

f. an exhaust duct connected to the hood for discharging the vapor therefrom,

g. a regulating damper coupled with the exhaust duct for regulating the amount of vapor and air to be exhausted from the hood through the duct,

h. a means for detecting pressure difference between the chute and the hood, and

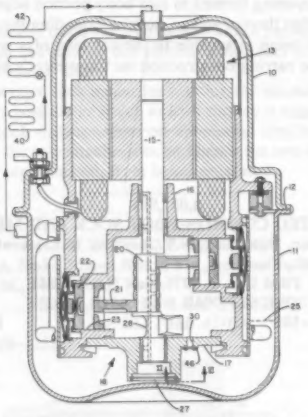
i. a means for actuating the damper so as to maintain the pressure in the hood lower than that in the chute in response to the pressure difference detecting means.

4,057,979

REFRIGERANT COMPRESSOR UNIT

Richard S. Abell, Manlius, and Tadek M. Kropiwnicki, W. Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 4, 1976, Ser. No. 738,766
Int. Cl.² F25B *43/02, 39/04*
U.S. Cl. 62—469 **2 Claims**



1. In a refrigerant compressor unit comprising a sealed casing, a reciprocating piston type compressor mounted in said casing, said compressor having a closed cylinder block including a bottom wall positioned in proximity to the bottom wall of said casing, a crankshaft journaled vertically in said cylinder block, said casing serving as an oil sump surrounding said cylinder block and containing an oil supply at a level above the bottom wall of said cylinder block, an oil pump operable to pump oil from said supply to the working parts of the compressor in said cylinder block, said bottom wall of said cylinder block being formed with a drain opening therethrough to permit lubricating oil to return from said cylinder block to said oil sump, the pressure in said cylinder block exceeding the pressure acting on the surface of said oil in said sump in a first operating condition of said compressor, with said pressure acting on the surface of said oil exceeding the pressure in said cylinder block in a second operating condition of said compressor, the improvement comprising:

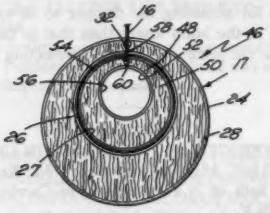
a valve normally closing said drain opening, said valve opening when the pressure in the cylinder block exceeds the pressure acting on the surface of said oil to permit the return of oil from said cylinder block to said oil sump via said drain opening, said valve assuming its normally closed position relative to said drain opening when the pressure acting on the surface of said oil exceeds the pressure in said cylinder block to prevent oil from flowing from said sump through said drain opening to said cylinder block.

4,057,980

EARRING WITH ORNAMENT OF NON-RIGID PLASTIC HAVING RESILIENT FILLER

Adolph DeCesaris, 39 N. Olney St., Johnston, R.I. 02919

Filed Apr. 29, 1974, Ser. No. 465,139
Int. Cl.[2] A44C 7/00
U.S. Cl. 63—13 5 Claims



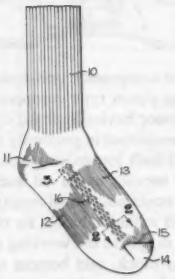
1. An earring construction of the piercing type, comprising a body portion formed of a nonrigid plastic material, a filler portion formed of a resilient material located within said body portion, an opening formed in said body portion adjacent to a peripheral edge thereof and an earwire extending through said opening and being attachable to the ear lobe of a wearer for mounting the earring construction on the wearer's ear.

4,057,981

VENTILATED CUSHION FOOT SOCK AND METHOD

John J. Runac, New York, N.Y., assignor to Crescent Hosiery Mills, Niota, Tenn.

Filed Dec. 2, 1976, Ser. No. 746,841
Int. Cl.[2] D04B 9/46; A41B 11/02
U.S. Cl. 66—185 11 Claims



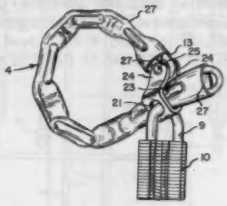
1. A sock including integrally knit leg and foot portions, said foot portion comprising a heel, a sole encompassing substantially half of the wales of said foot portion, an instep encompassing at least one-fourth of the wales of said foot portion and a toe, terry loops extending inwardly of and throughout at least said sole, terry loops extending inwardly of and throughout said instep, and elongate ventilator panels extending along opposite sides of said sole, said elongate ventilator panels having opposite ends contiguous with said heel and toe, having lower sides contiguous with said terry loops of said sole, and having upper sides contiguous with said terry loops of said instep, said ventilator panels comprising an open mesh stitch construction of open stitches interspersed with plain stitches to permit the passage of air therethrough and to provide for ventilation of the foot when the sock is worn.

4,057,982

THEFT-DETERRENT CHAIN LOCKING DEVICE

Walker E. Drayton, York, Pa., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

Continuation-in-part of Ser. No. 353,461, April 23, 1973, Pat. No. 3,939,677. This application Apr. 11, 1975, Ser. No. 567,385
Int. Cl.[2] E05B 73/00, 71/00
U.S. Cl. 70—14 5 Claims



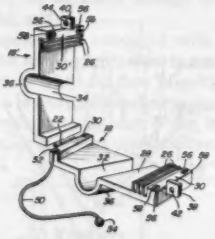
1. An adjustable locking device comprising:
a. a chain;
b. locking shackle member;
c. an adjustment device including a body member,
1. said body member being constructed of a single blank of strip-shaped material bent into a configuration defining an opening shaped to slidably receive said chain therethrough and to hold said chain against rotation, and
2. a pair of holes in said body member aligned with each other crosswise of said opening for receiving the shackle member in the path of axial movement of alternate links of the chain; and (d) attaching means for attaching the body member to one link of said chain.

4,057,983

LOCK FOR SKIS

Steven J. Morgan, 4925 SW. 45th, Apt. 2, Portland, Oreg. 97221

Filed July 14, 1976, Ser. No. 705,133
Int. Cl.[2] E05B 73/00
U.S. Cl. 70—18 14 Claims



1. A lock for skis, comprising, in combination:
a. a pair of clamp elements each provided with a recess disposed for receiving a ski;
b. hinge means connected to the clamp elements for pivotally connecting together the elements and permitting relative movement between the elements to and from a position clampingly retaining a pair of skis and their associated poles;
c. locking means connected to the clamp elements for retaining the elements in abutting, ski-holding relationship forming the clamping position; and
d. each element being provided with a plurality of planar knock-out partitions in the associated recess, the partitions standing upwardly in the recess toward the other of the elements when the elements are in the position clampingly retaining a pair of skis and extending in a plane parallel to a longitudinal extent of skis received in the lock for permitting adjustment of the lock to skis of various with widths by removal of selected ones of the partitions.

8. A lock for skis, comprising, in combination:
a. a pair of clamp elements each provided with a recess disposed for receiving a ski;
b. hinge means connected to the clamp elements for pivotally connecting together the elements and permitting relative mo· ement between the elements to and from a position clampingly retaining a pair of skis and their associated poles; and
c. locking means connected to the clamp elements for retaining the elements in abutting, ski-holding relationship forming the clamping position, each of the clamp elements further including a groove arranged for receiving a ski pole, the grooves being disposed at acute angles relative to the ski receiving recesses, the angles being taken along respective axes parallel to a longitudinal extent of skis and poles received in the lock, for orienting the poles at an acute angle relative to the skis and to one another when the elements are in the clamping position, the grooves being formed in the elements on either side of the respective recesses, opposite grooves cooperating to retain a single ski pole when the elements are in clamping position, the grooves of each of the elements being at the acute angle with respect to one another.

9. A lock for skis, comprising, in combination:
a. a pair of clamp elements each provided with a recess disposed for receiving a ski;
b. hinge means connected to the clamp elements for pivotally connecting together the elements and permitting relative movement between the elements to and from a position clampingly retaining a pair of skis and their associated poles;
c. locking means connected to the clamp elements for retaining the elements in abutting, ski-holding relationship forming the clamping position; and
d. a flexible member having a pair of spaced ends is anchored to one of the elements at one of the ends and is selectively attachable to and removable from at least one of the elements at the other of the ends only when the elements are in a position other than the clamping position, the flexible member being provided with an enlarged end portion, with the elements being provided with at least one indentation sized for receiving the enlarged portion and a slot communicating with the indentation for receiving a portion of the flexible member adjacent the enlarged end portion.

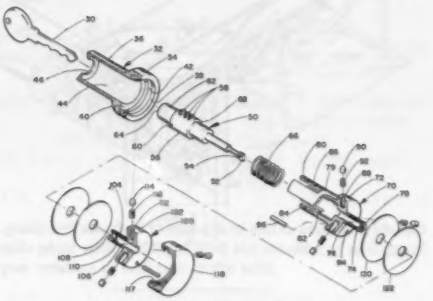
4,057,984

SKI LOCK DEVICE WITH SINGLE ACTUATING MEANS

Mauricio V. Avaiusini, 1038 S. 317th St., Federal Way, Wash. 98003

Continuation-in-part of Ser. No. 634,403, Nov. 24, 1975. This application July 19, 1976, Ser. No. 706,888
Int. Cl.[2] E05B *69/00, 9/08*
U.S. Cl. 70—58 **7 Claims**

1. Apparatus for locking a pair of skis together with their lower surfaces in juxtaposition, comprising:
a first attachment mountable onto an upper surface portion of a first ski, comprising a mounting bolt having a tubular shank part adapted to snugly fit into an opening therefor formed through the first ski, between the upper and lower surfaces of such ski, an enlarged head part connected to said shank part and adapted to project upwardly from the upper surface of such ski, and an end surface on said shank part opposite the head part which is at least substantially flush with the underside of the first ski;
a second attachment mountable onto a corresponding upper surface portion of a second ski, comprising a mounting bolt having a tubular shank part adapted to snugly fit into an opening therefore formed through the second ski, between the upper and lower surfaces of such ski, an enlarged head part connected to said shank part and adapted to project upwardly from the upper surface of such ski, and an end surface on said shank part opposite the head part which is at least substantially flush with the underside of the second ski, said end surface including a non-circular end opening bordered internally of said shank part by lock surface means;
lock bolt means including a lock bolt having an end portion which in cross-sectional shape matches the non-circular end opening and a lock surface on the inner side of said end portion, said lock bolt being normally retracted into the tubular shank part of the first attachment but being



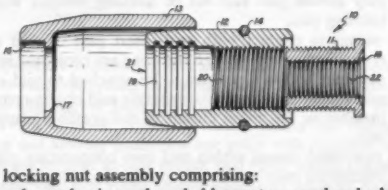
extendible out from such tubular shank part into the opening in the end of the tubular shank part of the second attachment; and
key operated lock means for rotating the extended lock bolt into a position in which its lock surface is engageable with the lock surface means on the second attachment to prevent the two attachments, and hence the two skis to which they are attached, from being separated.

4,057,985

LOCKING NUT ASSEMBLY

Michael A. Stahl, Miami Beach, Fla., assignor to Far Out Products, Ltd., Hollywood, Fla.

Filed Apr. 16, 1976, Ser. No. 677,835
Int. Cl.[2] F16B *41/00*
U.S. Cl. 70—231 **1 Claim**



1. A locking nut assembly comprising:
a. an axle nut having a threaded bore at one end and a locking bore at the other end thereof;
b. a separate bushing member having a threaded inner bore to threadingly engage a bicycle axle and a threaded outer surface to threadingly engage the threaded bore of said axle nut;
c. said axle nut having an outer surface including flat surface areas and an annular groove;
d. a resilient ring member disposed within said annular groove; and
e. a cover member slidingly disposed over said outer surface of the axle nut and having an inner surface engaging the outer periphery of said ring member to prevent rattling of said cover member 13,
f. said cover member having a tapered, smooth outer surface and an end portion with a bore opening juxtaposed the locking bore of the axle nut;
g. said cover member being freely rotatable when locked in position over said outer surface of the axle nut to prevent rotation of the assembly for removal thereof when said

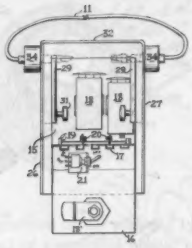
axle nut is tightened on the bicycle axle against a frame member of the bicycle.

4,057,986

SELF-CONTAINED ALARM LOCK

Sarah Zolke, 5246 Pratt, Skokie, Ill. 60076, and William Soto, 330 Springfield Drive, Apt. 301, Roselle, Ill. 60172

Filed July 19, 1976, Ser. No. 706,474
Int. Cl.[2] B60R *25/10*
U.S. Cl. 70—233 **4 Claims**



1. A self-contained portable alarm lock having a battery-powered electric circuit and audio alarm components,

a. a portable rectangular shaped case for the electric circuit and audio alarm components,

b. a door in one wall of said case including a lock therefor,

c. a current-conductive object-restraining member, the free ends of which provide insert pins adapted to be restrictively attached to said case,

d. openings formed in opposite side walls of said case adjacent one end thereof for receiving said insert pins provided by the free ends of said object-restraining member,

e. a pair of elongated U-shaped bar type manually operated slidable latches carried on confronting interior opposite side walls of said case, with said latches movable in the direction of said openings and into contact with said insert pins when the same are projected into said openings for releasably latching the same to said case,

f. track members on said confronting interior opposite side walls over which said manually operated latches are slidably moved into and out of latching contact with said latching pins,

g. means in contact with said insert pins of said object-restraining member when the same are projected into said openings and in a position to be attached to said case by said slidable latches for connecting said object-restraining member in the alarm circuit of the portable alarm lock, and

h. concealed means within said case cooperating with said restraining member for selectively conditioning for actuation the alarm circuit.

4,057,987

KEY CONTROLLED SECURITY APPARATUS

George P. Patriquin, Gardner, Mass., assignor to Hudson Lock, Inc., Hudson, Mass.

Division of Ser. No. 565,777, April 7, 1975, Pat. No. 3,973,421. This application Dec. 18, 1975, Ser. No. 642,170
Int. Cl.[2] E05B *27/00*
The portion of the term of this patent subsequent to Aug. 9, 1993 has been disclaimed.
U.S. Cl. 70—364 R **9 Claims**

1. A lock comprising:

a housing;

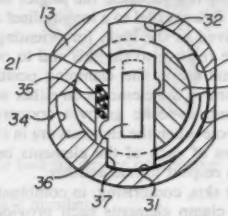
an actuator means retained by and rotatable between predetermined stations within said housing, said actuator defining a keyway for receiving a key;

operator means for effecting control functions in response to rotation of said actuator means into said predetermined stations;

locking tumbler means coupled between said housing and said actuator means and extending into said keyway, said locking tumbler means being biased in a locking position and movable into a sheer position by a proper key in said keyway;

locking tumbler blocking means preventing rotational movement of said actuator means from a locked station with said locking tumbler means in said locking positions and allowing rotational movement thereof with said locking tumbler means in said shear positions;

positional tumbler means coupled between said housing and said actuator means and extending into said keyway, said positional tumbler means being biased into a primary



position and movable in one direction into an intermediate position by a first proper key in said keyway and movable farther in said one direction into an auxiliary position by a second proper key in said keyway; and

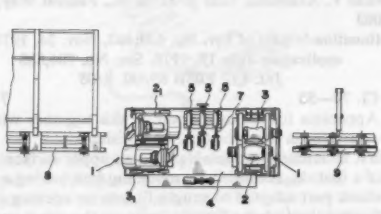
tumbler stop means effective with said positional tumbler means in said intermediate position to allow rotation of said actuator means in a given direction from said locked station to an operational station circumferentially spaced therefrom, and effective with said positional tumbler in said auxiliary position to limit rotation of said actuator means in said given direction from said locked station to an intermediate station cirumferentially spaced between said operational and locked stations.

4,057,988

RECTIFYING EQUIPMENT OF BAR MATERIAL

Kotaro Tsukamoto, 7-8, Kashima 4-Block, Yodogawa, Osaka, Osaka, Japan

Filed Aug. 16, 1976, Ser. No. 714,961
Int. Cl.[2] B21D *3/04*
U.S. Cl. 72—98 **1 Claim**



1. An apparatus for straightening rod or bar-shaped material, comprising a pair of end straightening means spaced in the direction of the length of the material to be straightened and each having a pair of side-by-side rolls thereon, one having a convex roll profile and the other having a concave roll profile, and the axes of said rolls being oppositely inclined to the horizontal, and driving means connected to the respective rolls for driving the rolls in the same rotational direction, and at least three intermediate straightening means between said pair of end straightening means and each comprising a guide horizontally slidably mounted for movement perpendicular to the direction between said end straightening means, a supporter on the end of said guide which is adjacent the path of the material through the apparatus, and a straightening tube freely rotat-

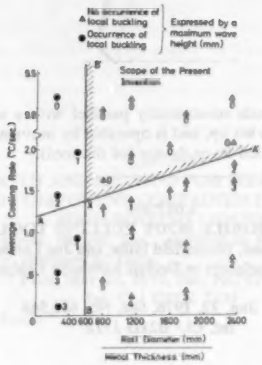
ably mounted within said supporter, said straightening tube having the shape of a nozzle with the larger end toward the direction from which the material to be straightened enters the apparatus and having a diameter at least slightly larger than the diameter of the material to be straightened, whereby when the material to be straightened has larger curves therein, said guides can be horizontally adjusted for engaging the curved material as it is rotated by said end straightening means for reducing the curvature thereof.

4,057,989

METHOD FOR LEVELLING A METAL STRIP OR SHEET

Hiroshi Takechi; Mitsunobu Abe; Ryoseki Katsutani, all of Kisarazu, and Yoshio Saito, Futsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 9, 1976, Ser. No. 713,043
Claims priority, application Japan, Aug. 13, 1975, 50-97514
Int. Cl.² B21D *1/02*; B21B *45/02*; C21D *9/46*
U.S. Cl. 72—128 **4 Claims**


No occurrence of local buckling
Occurrence of local buckling
Expressed by a maximum wave height (mm)
Scope of the Present Invention
Average Cooling Rate (°C/sec.)
Roll Diameter (mm) / Metal Thickness (mm)

1. A method for levelling a metal strip or sheet which is at a temperature of about 210° C comprising applying a repeated bending to the heated metal strip or sheet by means of a roll arrangement of two or more rolls each having a diameter of at least 600 times the thickness of the metal while cooling the metal strip or sheet from at least about 210° C to about 50° C at a cooling rate not lower than a critical cooling rate C as defined by the following formula and not higher than 200° C/sec.,

$$C = 1.2 + 0.3 \times 10^{-3} \frac{\text{Roll Diameter (mm)}}{\text{Metal Thickness (mm)}}.$$

4,057,990

BENDER ROLL GUARD

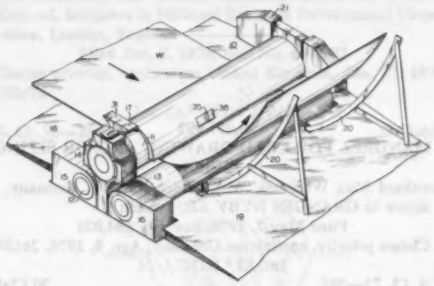
Amos P. Kelsey, Hamburg; John A. Palumbo, and James L. Thiel, both of Lackawanna, all of N.Y., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 29, 1976, Ser. No. 755,417
Int. Cl.² B21D *55/00*
U.S. Cl. 72—166 **5 Claims**

1. A protective shield for the bite between a pair of coacting rolls comprising

a. a guard rotatably mounted adjacent to and surrounding a portion of one of the rolls and in frictional contact therewith,

b. a guide plate located adjacent said guard, and



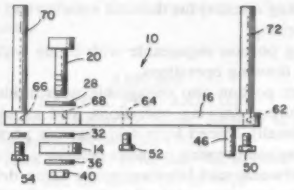
c. a guide rod attached to said guard and in contact with said guide plate with means to limit the rotation of said guard upon rotation of said one of the rolls.

4,057,991

APPARATUS FOR OFFSETTING WEAR IN CHAIN SAW BAR GUIDE RAILS

Edward Wise, and Mary G. Wise, both of 2220 Kenmar Road, Fortuna, Calif. 95540

Filed Nov. 19, 1975, Ser. No. 633,267
Int. Cl.² B21D *3/02*
U.S. Cl. 72—211 **3 Claims**



1. Apparatus for offsetting lateral channel wear in chain saw bar guide rails comprising lightweight hand held apparatus for manually aligning the guide rails of a chain saw bar, said apparatus having opposed adjustable roller means for rollingly engaging and moving chain saw bar guide rails together, said roller means secured to base means, said roller means comprising at least one first roller means adjustably secured to said base, at least one second roller means opposed to said first roller means and arranged to form a bite space between said second and first roller means, the axes of rotation of each of said opposed first and second roller means lying in substantially the same plane, said first and second roller means being arranged on said base, means operably engaging said roller means for adjusting said bite of said roller means and comprising screw means threadably engaging threaded hole means in said base for laterally displacing at least one of said roller means in said plane, said threaded hole means terminating in channel means for axially mounting one of said roller means, threaded stud means adjustably extendable from said base towards the outer face of said adjustable roller means for adjusting the depth of bite of said roller means, means for guiding said apparatus along the periphery of a chain saw bar comprising stud means extending from said base in the direction of said rollers for holding said base in alignment with the outer walls of chain saw bar guide rails, said stud means being spaced a distance substantially the same as the thickness of a chain saw bar, means for moving said roller means along the

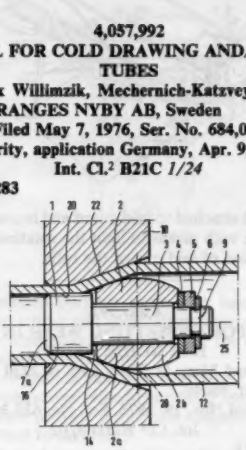
outer walls of the parallel rail of chain saw bar guide rails comprising hand held means for pulling and pushing said apparatus along the periphery of a chain saw bar.

4,057,992

MANDREL FOR COLD DRAWING AND/OR SIZING TUBES

Bernhard Max Willimzik, Mechernich-Katzvey, Germany, assignor to GRANGES NYBY AB, Sweden

Filed May 7, 1976, Ser. No. 684,021
Claims priority, application Germany, Apr. 9, 1976, 2615575
Int. Cl.² B21C *1/24*
U.S. Cl. 72—283 **20 Claims**



1. A floating mandrel for the cold drawing and/or sizing of tubes comprising:

a drawing portion engageable with inside walls of a tube during drawing operations,

a shoulder portion also engageable with inside walls of a tube during drawing operations, said shoulder portion being axially spaced from said drawing portion with its shoulder and drawing portions defining a lubricant space therebetween, said lubricant space being delimited in a direction transverse to the drawing axis of said mandrel by a tube being drawn when said mandrel is in an in-use drawing position,

and movement accommodating means for accommodating relative axial movement of said drawing portion and said shoulder portion to thereby vary the volume of said lubricant space and create a pumping effect on lubricant in said lubricant space during drying operations.

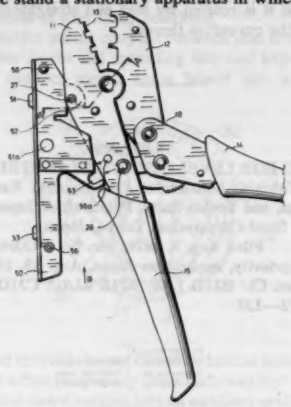
4,057,993

HAND OPERATED GRIPPING APPARATUS

Hans Undin, Akersberg, Sweden, assignor to Pressmaster, Ltd., Stockholm, Sweden

Filed Feb. 19, 1976, Ser. No. 659,331
Claims priority, application Sweden, Mar. 25, 1975, 7503488
Int. Cl.² B21D *9/08*
U.S. Cl. 72—410 **12 Claims**

1. Manually operable portable tool, especially ferrule crimping apparatus, mountable on a table stand and comprising first and second lever devices interconnected intermediate their ends so as to provide a pair of opposed jaws movable relative to each other to grip a workpiece, and a pair of opposed handles pivotable relatively to each other to actuate the jaws, wherein the first lever device includes at least two longitudinally spaced tens which are parallel with the pivot axis of the handles and are engagable in corresponding longitudinally spaced open-ended slot means in the stand, so that the tool by the sequential insertion of the said pens in the said slot means forms with the stand a stationary apparatus in which the first



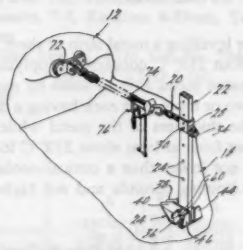
lever device extends substantially parallel with a surface on which the stand is set up, and is operable by movement of the handle of the second lever device (of the tool).

4,057,994

AUTOMOBILE BODY PULLING TOOL

Raymond P. Wolgast, Bloomfield Hills, and Joe Lamanna, Troy, both of Mich., assignors to Detroit Autobody Equipment, Inc., Troy, Mich.

Filed Jan. 22, 1976, Ser. No. 651,544
Int. Cl.² B21D *1/12*
U.S. Cl. 72—441 **5 Claims**



1. An apparatus for applying a pulling force to a surface to be reshaped, said apparatus comprising a generally upright column member, means on said column securing a pulling element extending between said column and said surface to be reshaped, a support base structure for said column and including a base plate adapted to be fixedly secured to a support surface provided with pairs of spaced openings or the like, said base structure being arranged generally horizontally and formed with a pair of inwardly projecting recesses adapted to receive mounting bolts for securing the same to any one of said pairs of openings in said surface, said support base including a pair of upright vertical members welded thereto and spaced apart a distance sufficient to define a recess approximately equal to the width of one of said column and having said one end of said column nestingly disposed therebetween, said up-

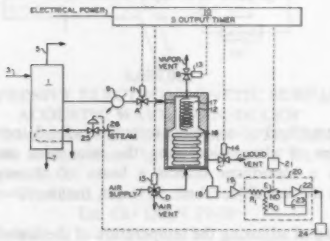
right members being formed with first and second generally vertically aligned pairs of apertures, said one end of said column being formed with a first opening aligned with said first pair of apertures and with a second opening aligned with said second pair of apertures, a first elongated generally cylindrically-shaped pin-like member positionable in a generally horizontal attitude within said first pair of apertures and said first opening and defining a pivotal axis about which said column is pivotable relative to said base structure, a second elongated generally cylindrically-shaped pin-like member selectively positionable in spaced parallelism relative to said first member and disposed within said second pair of apertures and said second opening simultaneously when said first member is positioned within said first pair of apertures and said first opening, whereby to fixedly secure said column in a generally vertical orientation upon said base structure, and force applying means secured to a lower portion of said column and to said base structure whereby said base structure and column are pivoted relative to each other when applying a force to said column to thereby apply a pulling force to the surface to be reshaped by said pulling element when one of said pin-like members is removed.

4,057,995

APPARATUS AND METHOD FOR MEASURING LOW BOILING COMPONENT CONTAINED IN RELATIVELY HIGH-BOILING LIQUID

Louis D. Kleiss, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 13, 1975, Ser. No. 577,138
Int. Cl.² G01N 7/00
U.S. Cl. 73—23 **7 Claims**



1. An apparatus for measuring the concentration of light hydrocarbon in a relatively high boiling liquid, said apparatus comprising:

a. a liquid-tight chamber having an inlet means and means for purging with liquid sample;

b. within the chamber (1) a bellows sealed to the chamber so that the exterior of the bellows forms an interior wall of the chamber and (2) a spring acting on the bellows at least partially to collapse the bellows;

c. a means for supplying gas pressure to the interior of the bellows to counteract the collapsing pressure of said spring;

d. in communication with the interior of the chamber a means for measuring the absolute pressure within the chamber; and

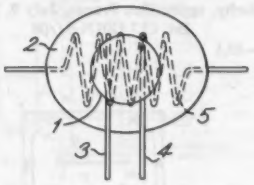
e. means for maintaining a constant temperature surrounding said chamber.

4,057,996

SYSTEMS FOR MONITORING THE COMPOSITION OF EXHAUST GASES

Jack Graham Firth, St Albans; Thomas Alwyn Jones, Dronfield, near Sheffield, and Brenda Rimmington, Sheffield, all of England, assignors to National Research Development Corporation, London, England

Filed Jan. 8, 1976, Ser. No. 647,983
Claims priority, application United Kingdom, Jan. 17, 1975, 02130/75
Int. Cl.² G01N 27/12
U.S. Cl. 73—23 **5 Claims**



1. A system for monitoring the composition of exhaust gases emitted from an apparatus for the controlled combustion of carbonaceous fuel, the system comprising:

a gas-sensitive resistor consisting essentially of gallium oxide;

means mounting said resistor for exposure to the exhaust gases in operation of the apparatus;

means for maintaining said resistor at a substantially constant temperature above that of the exhaust gases to which said resistor is exposed; and

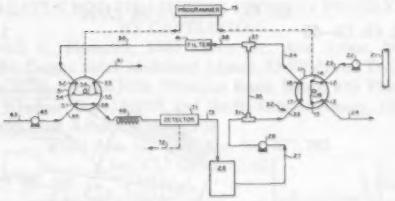
means for generating a signal dependent on the resistance of said resistor.

4,057,997

SAMPLE PREPARATION

Craig S. Chandler, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 31, 1976, Ser. No. 672,090
Int. Cl.² G01N 31/08, 1/22
U.S. Cl. 73—23.1 **23 Claims**



1. Apparatus comprising:

fluid sample material supply means for providing a supply of fluid sample material;

first, second, and third diluent conduit means for providing respective first, second, and third diluent fluid paths, each said diluent conduit means having an upstream end and a downstream end;

diluent material supply means for providing a flow of diluent material to the upstream ends of said first and second diluent conduit means;

first tee means for providing fluid communication among the downstream end of said first diluent conduit means, the downstream end of said second diluent conduit means, and the upstream end of said third diluent conduit means;

means for injecting a preselected volume of sample material

from said sample material supply means into said first diluent conduit means at a location intermediate of the upstream and downstream ends of said first diluent conduit means; and

means for removing a preselected volume of material from said third diluent conduit means to provide a diluted sample.

4,057,998

CHROMATOGRAPH, MORE PARTICULARLY FOR GAS PHASE CHROMATOGRAPHY

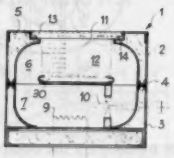
Claude Moreaux, Livry-Gargan, France, assignor to Societe Anonyme Intersmat, Pavillons-sous-Bois, France

Filed July 6, 1976, Ser. No. 702,875

Claims priority, application France, July 9, 1975, 75.21528

Int. Cl.² G01N *31/08*

U.S. Cl. 73—23.1 **11 Claims**



1. Chromatograph, more particularly for gas phase chromatography, comprising a modular enclosed space having compartments, temperature controlling means provided in each of said compartments, removable function modules selectively insertable in said compartments for providing selected different chromatography analysis functions, means provided in said compartments for receiving and releasably locking selected ones of said function modules, and means for selectively interconnecting said function modules according to the analysis problem to be solved.

4,057,999

APPARATUS FOR TESTING ENGINE OIL

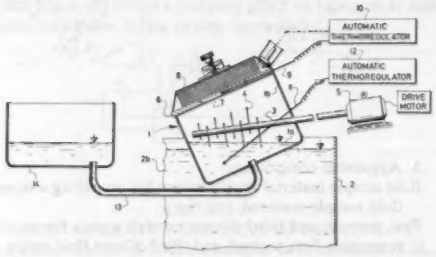
Vladimír Bazika; Přemysl Pražak, and Dana Havelková, all of Prague, Czechoslovakia, assignors to CKD Praha, Oborový podnik, Prague, Czechoslovakia

Filed July 14, 1976, Ser. No. 705,000

Claims priority, application Czechoslovakia, July 30, 1975, 5340/75

Int. Cl.² G01N *11/00, 33/26*

U.S. Cl. 73—53 **1 Claim**



1. An apparatus for testing engine oils, and in particular, oils to be used in compression ignition engines, comprising in combination,

a receptacle adapted to receive a liquid oil sample to be tested;

a cover plate having an opening and mounted on said receptacle;

a shaft having a plurality of projections extending therefrom, rotatably mounted in said receptacle, said projections being adapted to submerge into and emerge from said liquid oil and to splash said oil against said cover plate;

driving means operatively connected to said shaft for rotating it;

a test plate mounted in said opening of said cover plate to thereby seal said receptacle;

first temperature sensing means operatively mounted in said test plate;

heating means adapted to heat said test plate;

first thermal regulating means operatively connected to said heating means, on the one hand, and said first temperature sensing means, on the other hand, and adapted to maintain said test plate at a predetermined temperature;

second temperature sensing means operatively mounted in said receptacle to sense the temperature of said oil therein and to maintain it at a predetermined temperature; and

second thermal regulating means operatively connected to said second temperature sensing means, whereby the oil deposited on the test plate by being splashed thereagainst by said rotating projections can be tested by visually evaluating it.

4,058,000

ULTRASONIC IMMERSION TYPE TESTING

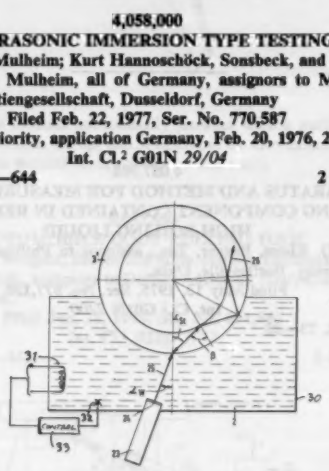
Karl Ries, Mulheim; Kurt Hannoschöck, Sonsbeck, and Günter Simonelt, Mulheim, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Feb. 22, 1977, Ser. No. 770,587

Claims priority, application Germany, Feb. 20, 1976, 2607485

Int. Cl.² G01N *29/04*

U.S. Cl. 73—644 **2 Claims**



1. In a method of inspecting test objects for detecting defects by means of ultrasonics using the immersion test method, wherein a transducer directs a beam of ultrasonic waves towards the test object through water, the improvement comprising:

the step of adjusting the temperature of the water for a fixed orientation of said transducer relative to the test object, to change the refraction angle of the beam into the test object.

4,058,001

ULTRASOUND IMAGING SYSTEM WITH IMPROVED SCAN CONVERSION

Albert S. Waxman, Santa Clara, Calif., assignor to G. D. Searle & Co., Skokie, Ill.

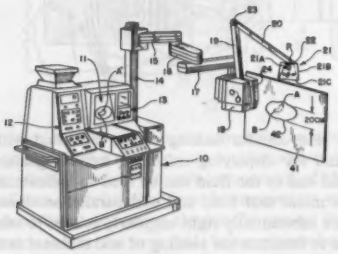
Filed Aug. 2, 1976, Ser. No. 710,942

Int. Cl.² G01N *29/00*; A61B *10/00*

U.S. Cl. 73—620 **12 Claims**

1. In an ultrasonic instrument for use in medical diagnosis having a transducer for transmitting vibrations at ultrasonic frequencies into the body of a patient and for detecting echoes produced at tissue interfaces within said patient by said vibrations and for generating responsive electrical echo signals, and

a display unit for producing a two-dimensional visual representation of said tissue interfaces in a scanning plane, the improvement comprising a digital scan converter for receiving inputs from said transducer and having location determination means for assigning two-dimensional coordinates in said scanning plane, and having addressable memory storage locations in communication with said transducer for storing representations of the amplitudes of said echo signals at corresponding memory storage locations having the addresses of the aforesaid two-dimensional coordinates, circuit means for communicating said stored representations to said display unit, and echo



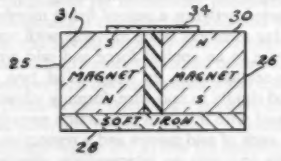
signal accumulation and normalization means accepting incoming echo signals having an amplitude less than a prerequisite amplitude, for comparing to said prerequisite the previously stored contents of said memory storage locations at the address corresponding to each said incoming signal, and, if said stored contents is less than said prerequisite, accumulating said incoming signal with said contents, normalizing the value thereby obtained by the number of occurrences of said accumulation and transmitting to said storage locations in normalized value thereby obtained for registration at said corresponding address.

4,058,002

DISPERSIVE ELECTROMAGNETIC SURFACE ACOUSTIC WAVE TRANSDUCER

Thomas J. Moran, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 23, 1976, Ser. No. 753,967
Int. Cl.² G01N *29/00*
U.S. Cl. 73—620 **7 Claims**



1. A dispersive surface acoustic wave electromagnetic transducer comprising:

a. means for providing a magnetic field; and

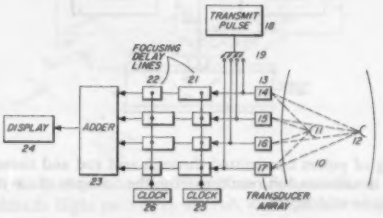
b. a meander line coil having conductors with progressively changing spacing between conductors at a predetermined rate of change of spacing, positioned in the said magnetic field.

4,058,003

ULTRASONIC ELECTRONIC LENS WITH REDUCED DELAY RANGE

Albert Macovski, Menlo Park, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed July 21, 1976, Ser. No. 707,329
Int. Cl.² G01N *9/24*
U.S. Cl. 73—609 **16 Claims**



1. Apparatus for receiving ultrasonic reflections from an object comprising:

a source of pulsed ultrasonic radiation which insonifies the object and produces a sequence of ultrasonic reflections;

a transducer array for receiving the sequence of ultrasonic reflections and producing a plurality of transducer signals;

a first focusing array of delay structures whose inputs are connected to the transducer signals and whose delay varies with the magnitude of the distance of each transducer to the axis of the array;

a second focusing array of delay structurs whose inputs are connected to the outputs of the first focusing array of delay structures and whose delay varies with the magnitude of the distance of each transducer to the axis of the array in a manner opposite to that of the first focusing array of delay structures so that the sum of the delays from each transducer through the first and second focusing delay structures decreases with the magnitude of the distance to the axis of the array;

means for adding the outputs of the second focusing array of delay structures to produce a focused signal; and

means for utilizing the focused signal.

4,058,004

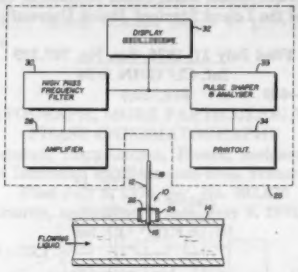
APPARATUS FOR MEASURING EROSION PRODUCED BY CAVITATION

Frederick G. Hammitt, 1306 Olivia St., Ann Arbor, Mich. 48104; Osman Saleh Mohamed Ahmed, 23 Wildwood Terrace, Glen Ridge, N.J. 07028; Niranjan Rasik Bhatt, 810 Victoria St., Windsor, Conn. 06095, and Jia-Bo Gilbert Hwang, 2385-2 Bishop, Ann Arbor, Mich. 48105

Filed Apr. 16, 1976, Ser. No. 677,792
Int. Cl.² G01N *17/00*
U.S. Cl. 73—86 **2 Claims**

1. Apparatus for sensing the collapse of cavitation bubbles in liquid flowing through a conduit having an inner surface and an opening extending through said surface to provide communication with said liquid, said apparatus comprising an elongated pulse transmitting rod member extending into said opening in a position in which the inner end thereof is substantially flush with said inner conduit surface adjacent said opening, the outer end of said rod member being disposed outside said conduit a predetermined remote distance from said conduit in a location in which said outer end can be maintained at a temperature substantially unaffected by the temperature of said liquid and said conduit, a diaphragm type member having a central opening and being mounted on said conduit, said rod member extending through said opening and being affixed to said diaphragm member in a sealing relationship therewith, said diaphragm member enabling transmission of relatively

undistorted and unattenuated pulses through said rod member, and a transducer mounted on said outer end of said rod member and operable to develop electrical signals in response to a



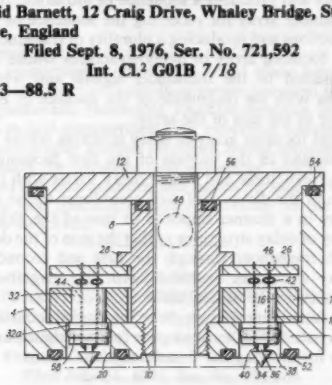
sensing of pulses transmitted through said rod and caused by forces in said conduit resulting from the collapse of cavitation bubbles in said liquid.

4,058,005

IMPROVEMENTS IN OR RELATING TO STRAIN TRANSDUCERS

John David Barnett, 12 Craig Drive, Whaley Bridge, Stockport, Cheshire, England

Filed Sept. 8, 1976, Ser. No. 721,592
Int. Cl.[2] G01B *7/18*
U.S. Cl. 73—88.5 R **8 Claims**



1. Strain measurement apparatus for measurement of strain at the surface of a structure and comprising a substantially rigid support, means for securing the support to said surface at a first region thereof, at least one resiliently deformable carrier element bearing at least one strain gauge being mounted on said support, location means between said at least one carrier element and the support to permit displacement of the carrier element relative to the support in a direction transverse to the direction of strain measurement, resilient means acting on said at least one carrier element in said transverse direction to apply a force urging the or each carrier element into engagement with a respective further region of the surface spaced from said first region to be deformed by straining of the surface between said first and further regions thereby to generate signals in said at least one strain gauge responsive to said strain.

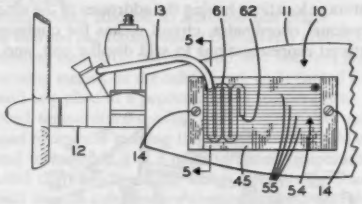
4,058,006

METERING DEVICE

James H. Crocket, 1442 N. Fruit Ave., Fresno, Calif. 93728

Filed Oct. 2, 1975, Ser. No. 618,765
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—113 **7 Claims**

1. A metering device comprising a housing having an elongated reservoir, with a metering end, for fluid to be metered, dimensioned to retain said fluid in an elongated coherent mass having a terminal end remote from said metering end wherein said reservoir has a transverse dimension which is sufficiently small to generate movement of said coherent mass by capillary attraction therethrough during metering and wherein the elongated reservoir is successively return bent in the housing to extend in substantially parallel sections to provide a compact device; and means mounted on said housing in covering rela-



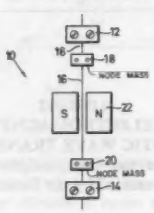
tion to the reservoir for making visible said fluid within the reservoir and for displaying reference means against which said terminal end of the fluid can be read to indicate the time required to meter said fluid and said parallel sections of the reservoir are substantially right-angularly related to said reference means to facilitate the reading of said terminal end of the fluid against the reference means.

4,058,007

VIBRATING WIRE MEASURING INSTRUMENT

Rainer Exner, Dransfeld, Germany, assignor to Sartorius-Werke GmbH, Gottingen, Germany

Filed Mar. 15, 1976, Ser. No. 666,952
Claims priority, application Germany, Apr. 24, 1975, 2518294
Int. Cl.[2] G01L *5/00*
U.S. Cl. 73—141 A **12 Claims**



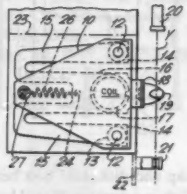
1. A vibrating wire measuring instrument for measuring forces, especially a wire balance comprising: at least one integral wire mounted between a pair of fixing members, at least one of said fixing members being movable with respect to the other in response to an applied force and said wire being of constant cross-section over its length; and two decoupling masses attached rigidly to said wire, forming vibrational nodes and dividing said wire into two connection nonvibrating portions between each of said masses and a respective one of said fixing members and into an intermediate vibrating portion, each nonvibrating connection portion extending between one of said vibrational nodes and a fixing member and the intermediate vibrating portion extending between the vibrational node decoupling masses; whereby the instrument enables energy to be introduced into said wire and cause said intermediate portion to be excited into transverse vibrations at a frequency representative of the force applied to the movable fixing member.

4,058,008

YARN TENSION TRANSDUCER

John Scott Pilkington, Cheadle, England, assignor to Abbey Electronics Limited, England

Filed Sept. 29, 1976, Ser. No. 728,013
Claims priority, application United Kingdom, Oct. 4, 1975, 40729/75
Int. Cl.[2] G01L 5/04
U.S. Cl. 73—144 6 Claims



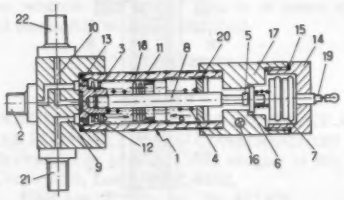
1. A yarn tension transducer comprising a movable yarn guide against which a running yarn touches and which is under a biasing force towards the yarn, movement of the guide in either of two opposite directions in response to yarn tension fluctuations being converted electrically into an indication of yarn tension values, the yarn guide being mounted on a springy thin plate which is of ferromagnetic material and generally of W shape with a central portion between two outer arms, the plate being clamped by the respective ends of the two outer arms, and the yarn guide being carried at a forward end of the central portion with the latter lying between two similar electrical induction coils located opposite one another, whereby the central portion of the plate operates as a spring-loaded armature.

4,058,009

ARRANGEMENT FOR MONITORING PNEUMATIC TIRE INFLATION PRESSURE

Hansruedi Etter-Felix, Neuhaus, Egnach (Thurgau), Switzerland

Filed Aug. 28, 1975, Ser. No. 608,537
Int. Cl.[2] B60C 23/04
U.S. Cl. 73—146.8 10 Claims



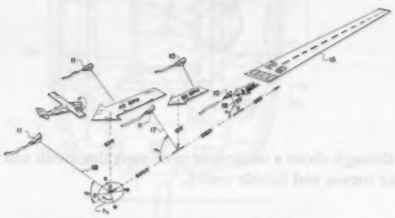
1. An arrangement for monitoring pneumatic tire inflation pressure, comprising a cylinder; an elongated bellows tube in said cylinder and having an end connected thereto and another end; a piston sealingly mounted in said other end and movable with said bellows tube during expansion and contraction of the same, said piston in part bounding a pressure chamber outside said bellows tube; and channel means for communicating said pressure chamber with a tire so that the piston is subject to the inflation pressure in the tire and shifts in said cylinder under concomittant change in the axial length of said bellows tube, in response to changes in the inflation pressure, said channel means including at least two channels each adapted to communicate with a different tire and each having an opening communicating with said pressure chamber, and said piston being movable to and from a position in which it blocks at least one of said openings.

4,058,010

AIRPORT WIND SHEAR MONITORING METHOD AND APPARATUS

Charles F. Woodhouse, Glen Wilton, Va., assignor to Approach Fish, Clifton Forge, Va.

Filed Apr. 6, 1976, Ser. No. 674,231
Int. Cl.[2] G01W 1/02
U.S. Cl. 73—189 42 Claims



1. A method of detecting hazardous wind conditions in the low altitude flight path of an aircraft, said method comprising the steps of:

a. calibrating the lift/drag flying characteristics of a tethered flight vehicle,

b. positioning a plurality of tether anchors to the ground at spaced positions along an approximate extension line from an aircraft runway end,

c. securing a tether mast to each anchor with a spherical segment of articulation freedom,

d. flexibly tethering a said calibrated flight vehicle to each of said masts for flight at a respective altitude near an aircraft approach path to said runway,

e. measuring the resultant tether restraint force exerted by the flight of a vehicle on a respective mast,

f. measuring the resultant azimuth angle to which a tether restraint force aligns a respective mast to determine the direction of wind acting upon the respective vehicle,

g. coordinating the resultant tether restraint force of a respective vehicle to the calibrated flying characteristics of said vehicle to determine the velocity of wind acting thereon, and

h. coordinating the wind and velocity determinations from said plurality of vehicles to determine the safety of wind conditions within said approach path for aircraft operation.

4,058,011

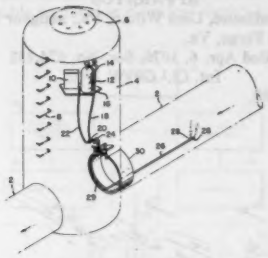
FLOW MONITORING APPARATUS

Kenneth W. Martig, Jr., Olympia, Wash., assignor to Pro-Tech, Inc., Paoli, Pa.

Continuation of Ser. No. 503,392, Sept. 5, 1974, Pat. No. 3,965,740. This application June 14, 1976, Ser. No. 695,545
The portion of the term of this patent subsequent to Oct. 14, 1993, has been disclaimed.
Int. Cl.[2] G01F 1/20
U.S. Cl. 73—194 R 5 Claims

1. Portable flow-monitoring apparatus for use in a cylindrical water or sewer pipe, comprising a flexible collar-like structure adapted to fit within an open end of the pipe and contiguous with the inside wall of the pipe, having the intended upper portion of the collar-like structure separated into a pair of ends adapted to be spaced farther apart or closer together to flex the collar-like structure circumferentially, including means adjacent the respective ends and adapted to expand the collar-like structure for frictional retention in place against the inside wall of the pipe and, in contrast, to contract it for ready removal therefrom, sensor means mounted on part thereof and includ-

ing a bubble outlet, and a bubble fluid conductor extending from outside the collar-like structure to the inside wall thereof



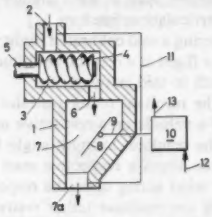
and through about a semicircle in contact therewith and to the sensor means and bubble outlet.

4,058,012

APPARATUS FOR MEASURING THE FLOW OF FINE-GRAINED HOT SOLIDS

Georg Gauch, Gotzenhain, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 1, 1976, Ser. No. 737,372
Claims priority, application Germany, Dec. 4, 1975, 2554534
Int. Cl.² G01F *1/28*
U.S. Cl. 73—228 **5 Claims**



1. Apparatus for measuring the flow rate of fine-grained solids, particularly coal or coke, which are at temperatures up to about 1000° C and impinge from a predetermined height on sensing plate means and impart impulses thereto which are fed to a measuring system, comprising gastight housing means provided with an inlet for the solids, intermediate chamber means adjacent said inlet containing substantially horizontally acting conveyor means for conveying the solids to a passage, downcomer well means disposed below the passage and containing said sensing plate and a bypass conduit for gases connecting the inlet of the housing means and the outlet region of the downcomer well.

4,058,013

MEAT THERMOMETER

David H. Trott, Cincinnati, Ohio, assignor to Crossbow, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 664,624, March 8, 1976. This application Sept. 13, 1976, Ser. No. 722,650
Int. Cl.² G01K *5/62, 13/00*
U.S. Cl. 73—352 **4 Claims**

1. In a grilling thermometer having an elongated stem, a temperature sensor in said stem, and an indicator connected to said sensor and projecting from said stem, the improvement comprising,

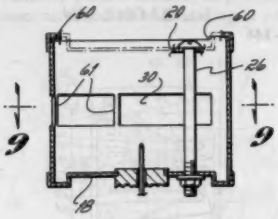
a disk mounted on said stem perpendicular to the axis of said stem,

a cylindrical housing mounted on said disk,

a cap mounted on said housing perpendicular to the axis of said stem,

said indicator projecting into said housing through the center of said disk and extending radially toward said housing,

a bolt connecting said cap to said disk to clamp said housing



between said cap and disk, said bolt being offset from the center of said disk in a portion of said housing remote from said indicator adjacent said cap,

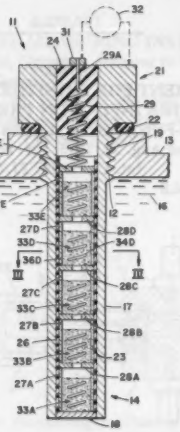
the edge portion of said cylindrical housing remote from said bolt being recessed, thereby maintaining said disk and cap in substantial parallelism when said housing and cap are assembled to said disk.

4,058,014

MAXIMUM TEMPERATURE RANGE INDICATOR

James C. Durand, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 16, 1976, Ser. No. 705,845
Int. Cl.² G01K *11/00;* G01R *27/00;* H01H *37/76*
U.S. Cl. 73—358 **9 Claims**



1. A maximum temperature range indicator comprising:

a plurality of spaced-apart electrical contacts,

a plurality of electrical resistor segments connecting said contacts together in electrical series relationship to establish high-resistance conductive paths between successive pairs of said contacts, and

a plurality of temperature-responsive electrical switches each being maintained operatively spaced between a different pair of said contacts, each of said switches coacting with a temperature-sensitive means for closing a low-resistance conductive path between an associated pair of said contacts upon occurrence of a predetermined temperature, the predetermined temperature to which each of said temperature-sensitive means responds being a differ-

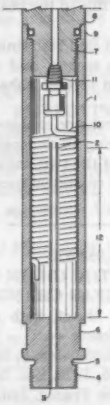
ent predetermined temperature whereby the maximum temperature range experienced by said indicator over a period of time may be determined by measuring the electrical resistance through the electrical circuit formed by said pluralities of contacts and resistor segments and switches.

4,058,015

CONTAMINATION TRAP FOR PRESSURE GAUGES

Ralph A. Stode, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jan. 10, 1977, Ser. No. 757,813
Int. Cl.² G01L *7/00*
U.S. Cl. 73—395 **4 Claims**



1. A pressure sensitive contamination trap to protect pressure sensors from water and other foreign materials, comprising a sealed vessel containing a first fluid, said vessel having an intake conduit to the vessel interior above the level of the first fluid, and a buffer tube filled with a second fluid, said buffer tube projecting below the level of the first fluid, said second fluid being in contact with said first fluid at one end of the buffer tube and with a pressure sensor at the other end of the buffer tube, wherein said second fluid is of lower specific gravity and immiscible with said first fluid.

4,058,016

COMBINATION VACUUM/PRESSURE GAUGE AND DUAL PURPOSE CASING CONSTRUCTION

Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.

Filed Apr. 1, 1976, Ser. No. 672,675
Int. Cl.² G01L *7/16*
U.S. Cl. 73—419 **15 Claims**

11. A combination pressure/vacuum gauge comprising:

a casing having a base;

first and second cylinders located on said base on a common axial line;

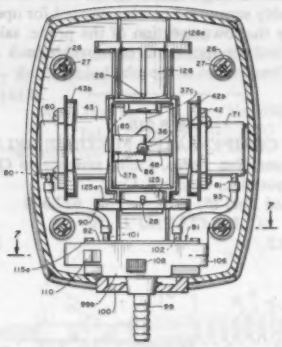
first and second pistons in said first and second cylinders, respectively;

a piston rod connected between said pistons in said cylinders;

spring means operative between said second cylinder and said second piston for biasing both said pistons toward one end of each of said cylinders;

a pressure opening in said first cylinder adjacent its said one end, and a vacuum opening in said second cylinder adjacent the end opposite its said one end; and

valve means for connecting a pressure source to said pressure opening or a vacuum source to said vacuum opening



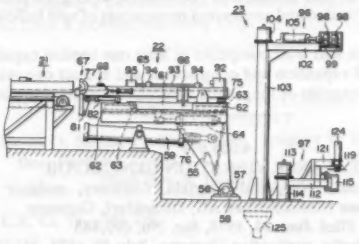
causing said pistons to move from said one end of said cylinders.

4,058,017

AUTOMATIC PROBE FEEDING, SETTING AND WITHDRAWING APPARATUS

Kenichi Tsujimoto; Yoshiharu Ikeuchi, and Akira Kuriyama, all of Wakayama, Japan, assignors to Sumitomo Metal Industries Ltd., Osaka, Japan

Filed July 8, 1976, Ser. No. 703,426
Claims priority, application Japan, July 11, 1975, 50-85601; July 19, 1975, 50-88954; July 15, 1975, 50-98664[U]; July 15, 1975, 50-98665[U]
Int. Cl.² G01N *1/04*
U.S. Cl. 73—423 R **13 Claims**



1. An automatic probe feeding, setting and withdrawing apparatus comprising, in combination: a probe container case provided with a probe dispensing mechanism comprising rows of probe supporting arms, each row of said arms being arranged in two vertically spaced stages and in pairs of two for reciprocation inwardly and outwardly from the both sides of a bottom portion of said case by a link mechanism; probe transfer means provided with a motor-driven probe push member at an end of a carriage board formed with a V-shaped channel in its surface; probe setting means comprising a movable block provided for sliding movement on a board pivotally supported in close proximity to one end of said probe transfer means, and a probe fitting block disposed parallel to said movable block and equipped at both ends thereof with probe clamps adapted for holding the probe from its sides and upper surface as well as having at its front end a pair of swingable probe fitting guides, said probe fitting block being also provided at a side thereof with bars designed to kick up the probe through openings formed in the probe resting surface thereof; and probe withdrawing and recovering means comprising a probe grasping mechanism having a pair of pawls arranged for opening and

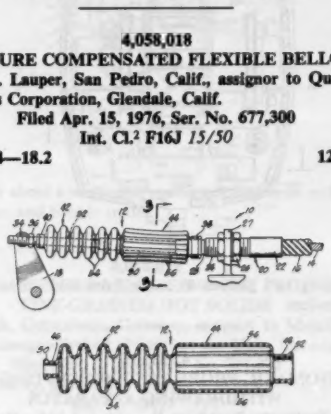
closing to grasp the upper portion of the probe, said mechanism being pivotally supported to be movable back and forth on the track of movement of a probe holding rod, and a probe cutting mechanism having a motor-driven cutter attached with a pair of swingably supported pawls arranged for opening and closing to grasp the lower portion of the probe, said mechanism being pivotally supported to be movable back and forth on the track of movement of a probe holding rod.

4,058,018

PRESSURE COMPENSATED FLEXIBLE BELLOWS

Warner R. Lauper, San Pedro, Calif., assignor to Quadrastat Controls Corporation, Glendale, Calif.

Filed Apr. 15, 1976, Ser. No. 677,300
Int. Cl.[2] F16J *15/50*
U.S. Cl. 74—18.2 **12 Claims**



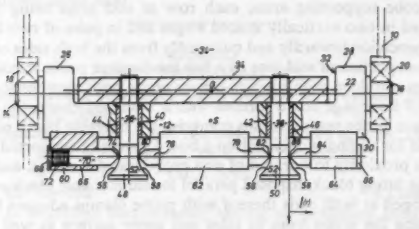
1. An internal pressure compensated flexible bellows for protecting a moving mechanism, comprising:
   a. an axially extendable and contractable elongated tubular member having flexible surrounding deformable wall sections and being formed at its opposite ends to respectively provide a turbular connector;
   b. self-contained means including said surrounding wall sections for maintaining a substantially constant internal pressure of fluid entrapped within said bellows by the closure of said tubular end connectors, during longitudinally extended and contracted movements of said bellows; and
   c. in which said wall comprises at least one section capable of radial expansion and contraction, and at least one other section capable of longitudinal extension and contraction.

4,058,019

UNBALANCE VIBRATION GENERATOR

Günther Braun, Wuppertal-Elberfeld, Germany, assignor to Losenhausen Maschinenbau AG, Dusseldorf, Germany

Filed June 24, 1976, Ser. No. 699,483
Claims priority, application Germany, July 19, 1975, 2532333
Int. Cl.[2] F16H *37/00*; B07B *1/44*
U.S. Cl. 74—87 **15 Claims**



1. In an unbalance vibration generator adapted to be driven at varying rotational speeds comprising:
   a first unbalance mass having a center of gravity; means for mounting said first unbalance mass for rotation about an axis of rotation; said center of gravity of said first unbalance mass being located at a distance from said axis of rotation, whereby said center of gravity of the first unbalance mass and said axis of rotation define a radially extending plane;
   a second unbalance mass having a center of gravity; means for rotating said second unbalance mass together with said first unbalance mass and for guiding said second unbalance mass for radial movement in said radially extending plane,
   said center of gravity of said second unbalance mass being located in said radially extending plane at a distance from said axis of rotation and on the side of said axis of rotation opposite to the center of gravity of said first unbalance mass; and
   resilient restraining means engaging said second unbalance mass to counteract any radially outward movement of said second unbalance mass due to the centrifugal force acting thereon,
   the improvement wherein said restraining means comprises spring means and cam means, said spring means being arranged to act on said second unbalance mass through said cam means,
   said first and second unbalance masses, said spring means and said cam means being so dimensioned that the resultant centrifugal force of the two unbalance masses is substantially constant at all rotational speeds within a range of rotational speeds.

4,058,020

DEVICE FOR GUIDING THE CHAIN OF DERAILLEUR BICYCLE GEAR CHANGERS

Roger Huret, and Jacques Huret, both of 60, avenue Felix Faure, 92000 Nanterre, France

Continuation of Ser. No. 539,852, Jan. 9, 1975, abandoned. This application Oct. 26, 1976, Ser. No. 735,317
Claims priority, application France, Jan. 30, 1974, 74.03142
Int. Cl.[2] F16H *7/22*
U.S. Cl. 74—217 B **16 Claims**

1. In a device for guiding the link chain of a bicycle derailleur gear changer on a bicycle having a wheel including a hub, a plurality of sprocket wheels attached to said hub and an endless chain link drive chain having links formed of pairs of articulated fish plates, and a derailleur gear changer for moving the chain between said plurality of sprocket wheels attached to the hub of the bicycle wheel, the improvement comprising external and internal cheek plates rigidly secured to each other in slightly spaced relation to each other with the external cheek plate being spaced further from the bicycle wheel than the internal cheek plate, said cheek plates being pivotally mounted on said derailleur gear changer about an axis extending parallel to the axis of rotation of the sprocket wheels for pivotal movement in planes substantially perpendicular to said axes; said plates moving together with the derailleur gear changer transversely with respect to said planes of pivotal movement on a path which covers each of said plurality of sprocket wheels; a chain guide pulley and a separate chain tensioning pulley rotatably mounted between said cheek plates in spaced relation to each other adjacent opposite ends

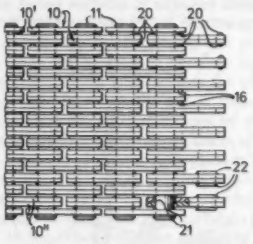
of the plates, said chain guide pulley being normally located above the tensioning pulley closer to said sprocket than the tensioning pulley, said link chain passing in contact with the pulleys generally diagonally from said tensioning pulley to said guiding pulley between said cheek plates, said cheek plates, at least in the region thereof adjacent the part of the chain guiding pulley which is normally contacted by the link chain during operation of the bicycle, having extension portions extending radially beyond the periphery of said chain guiding pulley through a distance corresponding to at least the height of a chain link, said radial extensions terminating in edges which are turned over in opposite directions extending away from the guiding pulley; the edges of the extensions of the cheek plates having a breadth sufficient to support a segment of chain extending between one of said sprocket wheels and said chain-tensioning pulley; said turned over edge of the radial extension of the external cheek plate having, at least in the zone adjacent the chain-guiding pulley, a breadth at least equal to the maximum breadth of the links of the chain.

4,058,021

LEAF CHAIN AND TO DRIVING ARRANGEMENTS EMPLOYING SAME

Peter Wood, Cheadle, England, assignor to Renold Limited, Manchester, England

Continuation of Ser. No. 551,618, Feb. 21, 1975, abandoned.
This application Oct. 12, 1976, Ser. No. 731,334
Claims priority, application United Kingdom, Feb. 28, 1974, 9221/74
Int. Cl.² F16H *7/06*; F16G *13/00, 13/18*
U.S. Cl. 74—229 **25 Claims**



14. A limited torque, positive drive transmitting arrangement comprising:

a rotatable drum having a fluted periphery, said drum being rotatable in at least one of opposite directions about an axis of rotation;

a tensioned leaf chain passing over or around the drum, the leaf chain including:

a plurality of interlacing leaf chain links having respective peripheral edges, respective ends and respective opposite sides;

bearing pins interconnecting the leaf chain links such that portions of sides of the adjacent links are adjacent each other; and

spacing means disposed between the adjacent sides of each adjacent pair of the leaf chain links for maintaining the peripheral outermost edges of each adjacent pair of the leaf chain links in spaced apart relationship, said spacing means of at least one of said leaf chain links comprising bulges formed in a side of said at least one leaf chain link; and

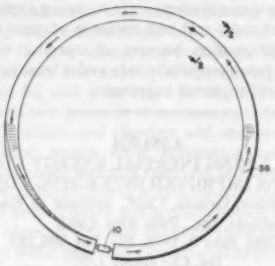
the edges of the leaf chain links all being of substantially identical figure-of-eight configuration and the flutes of the fluted periphery of the drum extending substantially straight and in parallel with the rotational axis of the drum, the flutes being all of substantially identical, uniform, cross-sectional shape and being substantially uniformly spaced, the depth, shape and spacing of the flutes being such that the peripheral edge of each of the links of the chain in engagement with the drum engages flute surface portions of adjacent flutes in the drum at corresponding sides thereof.

4,058,022

MOBIUS DRIVE BELT FASTENER

A. Harry S. Pickburn, 4457 Chestnut Ridge Road, Tonawanda, N.Y. 14150

Filed Jan. 19, 1976, Ser. No. 650,361
Int. Cl.² F16G *3/07, 7/00*
U.S. Cl. 74—231 MB **4 Claims**



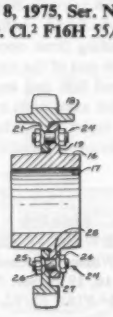
1. A mobius drive belt fastener means comprising a first belt securing means, and second belt securing means, said securing means being joinable one to the other along a substantially common longitudinal axis, said securing means being rotatable with respect to one another along said longitudinal axis, said first securing means has locking surface means extending therefrom, said second securing means has locking surface engaging means for lockably engaging said locking surface, when said securing means are coupled to one another, coupling means for joining said securing means to one another along said longitudinal axis whereby said securing means when attached to the butt ends of a drive belt can be lockably rotated along said axis to form a mobius belt drive loop.

4,058,023

ROTATING ASSEMBLY FOR MATERIAL HANDLING EQUIPMENT

Floyd O. Smith, Portland, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed Dec. 8, 1975, Ser. No. 638,971
Int. Cl.² F16H *55/30*
U.S. Cl. 74—243 DR **2 Claims**



1. A rotating assembly for material handling equipment comprising:

a cast metal hub and a cast metal sprocket fixed thereto and having a common axis of rotation, said sprocket including a plurality of segments circumferentially spaced apart along generally radial lines,

a plurality of circumferentially spaced-apart openings ex-

tending axially through each of said hub and segments and provided therein during casting thereof, and openings in said hub being generally aligned with the openings in said segments for the receipt of a bolt means in each pair of aligned openings,

each segment opening having spherical zonal surfaces at both ends thereof said hub having a flange providing a pair of faces, one of said faces abutting said segments, the other of said faces having a spherical zonal depression about each hub opening, and

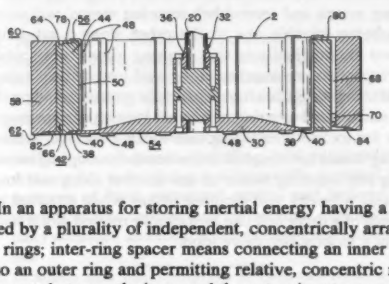
bolt means extending through each pair of openings and having a slightly smaller diameter than said openings, said bolt means being equipped at each end thereof with a spherical nut means clampingly engaging a spherical zonal surface, whereby said bolt means is adapted to assume a nonaxial disposition because of opening misalignment while still being essentially only under tension in clamping said hub and segments together.

4,058,024

MULTIPLE RING INERTIAL ENERGY STORAGE WHEEL WITH IMPROVED INTER-RING CONNECTOR

Hayden S. Gordon, Orinda, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed June 9, 1976, Ser. No. 694,257
Int. Cl.² G05G *1/00*
U.S. Cl. 74—572 **17 Claims**



1. In an apparatus for storing inertial energy having a rotor defined by a plurality of independent, concentrically arranged rotor rings; inter-ring spacer means connecting an inner rotor ring to an outer ring and permitting relative, concentric radial movements between the inner and the outer rings to accommodate radial expansions of the rings due to centrifugal forces; and means for rotating the rotor rings about a common, concentric axis; the improvement to the inter-ring spacer means comprising: a spacer ring constructed of a substantially rigid material disposed between an inner ring and an outer ring, the spacer ring having a cylindrical configuration, a plurality of slots alternatingly extending from opposing axial ends of the ring towards the opposite end of the ring and terminating short of such opposite end, and first and second connecting means disposed at the respective axial ends of the ring for engaging the adjacent outer and inner rings, the first and second connecting means being circumferentially offset with respect to each other.

4,058,025

COUNTERWEIGHT ASSEMBLY

Charles A. Wood, 5539 Whispering Creek, Houston, Tex. 77017

Filed June 16, 1975, Ser. No. 587,358
Int. Cl.² F16F *15/22, 15/28*
U.S. Cl. 74—573 R **10 Claims**

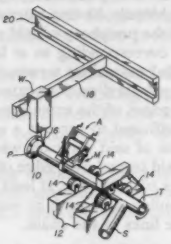
1. An adjustable counterweight assembly for use with a rotatable tubular member, comprising:

a frame;

engaging means mounted on said frame and having a substantially regular arcuate surface for engaging the outer surface of the tubular member;

clamping means detachably mounted to said frame and extendable around the tubular member for detachably securing said engaging means to the outer surface of tubular member;

weight carriage means including a weight receptacle mounted on said frame for radial movement with respect to the tubular member; and



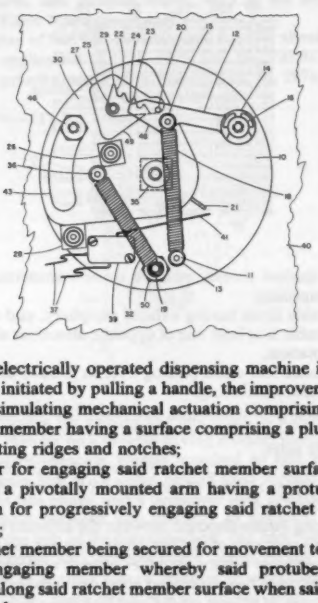
adjusting means mounted on said frame for moving said weight carriage radially with respect to the tubular member.

4,058,026

MECHANICAL ACTUATION SIMULATOR

Norman K. Simpson, 1770 C Industrial Road, Las Vegas, Nev. 89102

Filed Apr. 26, 1976, Ser. No. 679,998
Int. Cl.² G05G *1/04*
U.S. Cl. 74—577 R **4 Claims**



1. In an electrically operated dispensing machine in which actuation is initiated by pulling a handle, the improvement of a device for simulating mechanical actuation comprising:

a ratchet member having a surface comprising a plurality of alternating ridges and notches;

a member for engaging said ratchet member surface comprising a pivotally mounted arm having a protuberance thereon for progressively engaging said ratchet member surface;

said ratchet member being secured for movement to engage said engaging member whereby said protuberance is urged along said ratchet member surface when said handle is pulled.

4,058,027

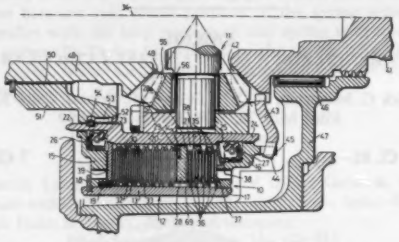
CONTROL COUPLINGS

Oswald Webb, Coventry, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed July 9, 1976, Ser. No. 704,023
Int. Cl.² F16H *1/44;* F16D *35/00, 43/25*
U.S. Cl. 74—711 **10 Claims**

1. A control coupling comprising an enclosure containing a

viscous liquid; first and second sets of mutually interleaved elements and third and fourth sets of mutually interleaved elements arranged for rotation about a common axis within the enclosure with the viscous liquid in contact with facing working surfaces of said interleaved elements, said first and third sets of elements having driving connections with a first rotatable member and said second and fourth sets of elements having driving connections with a second rotatable member; spacing means to space apart adjacent elements of at least one of said first and second sets and resilient spacing means to space apart adjacent elements of at least one of said third and fourth sets so that the facing surfaces of adjacent elements of each spaced set are spaced apart by distances greater than the thicknesses of the portions of the elements of the other set interleaved between said facing surfaces; a differential piston sub-



ject to the pressure in the enclosure; an abutment carried by the piston; and first spring means urging the piston to a first position in which the facing surfaces of adjacent elements of the or each spaced set of said third and fourth sets are spaced apart by distances greater than the thicknesses of the portions of the elements of the other set interleaved between said facing surfaces, the arrangement being such that as the pressure of the liquid in the enclosure increases the piston moves against the first spring means to cause the abutment to compress said resilient spacing means and bring the elements of the third and fourth sets into mutually clutching engagement.

9. The combination of a control coupling according to claim 1 and a differential gearing in which the elements of the first and third sets on the one hand and the elements of the second and fourth sets on the other hand are drivingly connected to two relatively rotatable elements of the gearing.

4,058,028

TRANSMISSION-REGULATING DEVICE FOR MOTOR VEHICLE

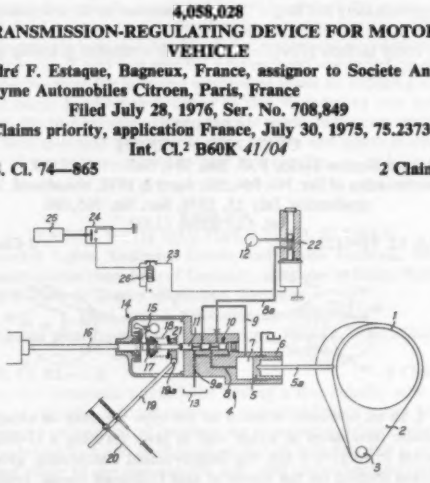
André F. Estaque, Bagneux, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed July 28, 1976, Ser. No. 708,849

Claims priority, application France, July 30, 1975, 75.23739

Int. Cl.[2] B60K *41/04*

U.S. Cl. 74—865 **2 Claims**



1. A device for regulating the operation of the transmission of a motor vehicle having a variator which includes a step-down control element, said device comprising a hydraulic receiver, an element movable in said receiver to define therewith a chamber, means connecting said movable element with the step-down control element of the variator, distributor means associated with said receiver, a slide valve to said distributor means, a source of pressure fluid, a reservoir for pressure fluid, first conduit means adapted to communicate said chamber through said distributor means with said source, second conduit means adapted to communicate said chamber through said distributor means with said reservoir, a centrifugal regulator movable in response to engine speed, connecting means associating the slide valve with the centrifugal regulator resilient means associated with said connecting means, means for controlling said resilient means in response to operation of an accelerator for said engine, said centrifugal regulator, said resilient means and said control means serving to establish three positions for said slide valve, in the first of which the effect of the resilient means predominates and communication is established between said chamber and said source through said first conduit means while preventing communication between said chamber and said reservoir through said second conduit means, in the second of which the effect of said centrifugal regulator predominates and communication is established between said chamber and said reservoir through said second conduit means while preventing communication between said chamber and said source through said first conduit means, and in the third of which the effects of the resilient means and the centrifugal regulator are in equilibrium and communication is prevented between said chamber and both said source and said reservoir, a two position electrically operable valve in said first conduit means and having a normally open position connecting said first conduit means with said source, an energising circuit for said valve, switch means normally holding said energising circuit open, and a device for detecting the rotary speed of the engine when said speed is at least equal to a predetermined value and for closing said switch means thereby to energise said circuit, close said valve and thus close said first conduit means.

4,058,029

TRANSMISSION-REGULATING DEVICE FOR MOTOR VEHICLE

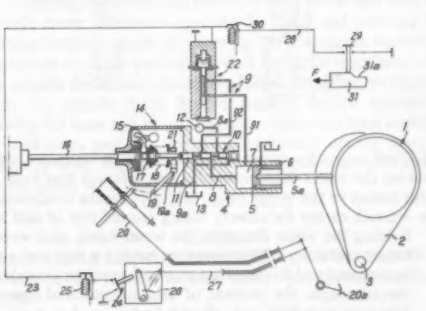
André F. Estaque, Bagneux, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed July 28, 1976, Ser. No. 709,420

Claims priority, application France, July 30, 1975, 75.23740

Int. Cl.[2] B60K *41/18*; G05G *21/00*

U.S. Cl. 74—865 **3 Claims**



1. A device for regulating the operation of the transmission of a motor vehicle having a speed reversing gear associated with a speed variator which includes a step-down control element, said device comprising a member tending to maintain said element in its position of low speed reduction, a hydraulic receiver, an element movable in said receiver to define there-

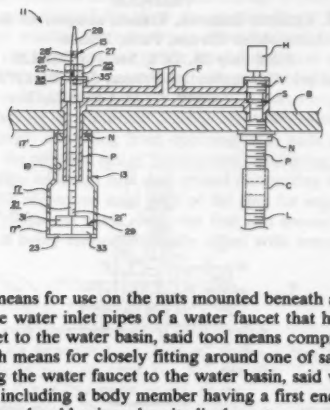
with a chamber, means connecting said movable element with the step-down control element of the variator, distributor means associated with said receiver, a source of pressure fluid, a reservoir for pressure fluid, first conduit means adapted to communicate said chamber through said distributor means with said source, second conduit means adapted to communicate said chamber through said distributor means with said reservoir, a centrifugal regulator movable in response to engine speed, connecting means associating the distributor means with the centrifugal regulator, resilient means associated with said connecting means, means for controlling said resilient means in response to operation of an accelerator for said engine, said centrifugal regulator, said resilient means and said control means serving to establish three positions for said distributor means, in the first of which the effect of the resilient means predominates and communication is established between said chamber and said source through said first conduit means while preventing communication between said chamber and said reservoir through said second conduit means, in the second of which the effect of said centrifugal regulator predominates and communication is established between said chamber and said reservoir through said second conduit means while preventing communication between said chamber and said source through said first conduit means, and in the third of which the effects of the resilient means and the centrifugal regulator are in equilibrium and communication is prevented between said chamber and both said source and said reservoir, a two-position electrically operable valve in said second conduit means and having a normally open position permitting flow through said second conduit means, an energising circuit for said valve, switch means normally holding said energising circuit open, an element for closing said switch means on accelerator for said engine and means connecting said element to said accelerator so that said element is arranged to close said switch means when said accelerator is in a position of rest.

4,058,030

WATER FAUCET TOOL MEANS

Willis H. Simmons, 9766 Redwood Road, Millington, Tenn. 38053

Filed Mar. 11, 1976, Ser. No. 666,179
Int. Cl.[2] B25B *27/24, 13/48*
U.S. Cl. 81—53 R **10 Claims**



1. Tool means for use on the nuts mounted beneath a water basin on the water inlet pipes of a water faucet that hold the water faucet to the water basin, said tool means comprising:

a. wrench means for closely fitting around one of said nuts holding the water faucet to the water basin, said wrench means including a body member having a first end and a second end and having a longitudinal aperture completely therethrough, the portion of said longitudinal aperture adjacent said first end of said body member having a cross-sectional shape substantially identical to the cross-sectional shape of a first standard size of said nuts holding the water faucet to the water basin;

b. securing means for securing said wrench means to one of said nuts holding the water faucet to the water basin, said securing means including a rod member for extending through said longitudinal aperture of said body member of said wrench means and through one of said nuts holding the water faucet to the water basin, said rod member having a first end and second end, at least said first end of said rod member being threaded, said securing means including a plate member fixedly attached to said second end of said rod member, said plate member being of a shape so as to prevent said wrench means from passing thereover, said securing means including a nut member having a threaded aperture therethrough for coacting with said threaded first end of said rod member in a manner to clamp said wrench means about one of said nuts holding the water faucet to the water basin and against the underneath side of the water basin; and

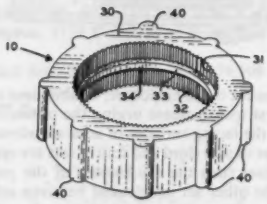
c. means for transmitting torque between said rod member of said securing means and said wrench means.

4,058,031

WRENCH FOR A SUBSTANTIALLY CIRCULAR WORKPIECE

Masick C. Magarian, 4481 N. Palm Ave., Fresno, Calif. 93704

Filed May 28, 1976, Ser. No. 691,089
Int. Cl.[2] B25B *13/52*
U.S. Cl. 81—64 **7 Claims**



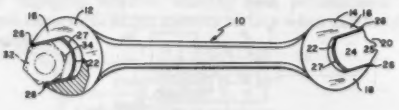
1. A wrench for a substantially circular workpiece comprising an annular elastic body adapted to be tensioned about a workpiece and having a resiliently compressible inner surface adapted to conform to the workpiece when the body is tensioned thereabout, said body having an axial opening and predetermined forward and rearward ends, the inner surface having sets of serrations adjacent to the opposite ends with the individual serrations elongated axially of the opening, the set of serrations adjacent to the forward end being of a diameter approximately but larger than the diameter of the serrations at the rearward end to facilitate installation, and said body having an outer surface providing outwardly extended grasping protuberances.

4,058,032

OPEN-END WRENCH

Richard Benton Jacks, P.O. Box 284, Sunnyvale, Calif.

Continuation of Ser. No. 564,222, April 2, 1975, abandoned. This application July 15, 1976, Ser. No. 705,690
Int. Cl.[2] B25B *13/02*
U.S. Cl. 81—125 **2 Claims**



1. In an open-end wrench of the type wherein an elongate handle terminates at either end in jaws forming a U-shaped recess to receive a nut, the improvement comprising: groove means formed on the inside of said U-shaped recess, resilient insert means positioned within said groove means so as to protrude into said U-shaped recess, said resilient insert means

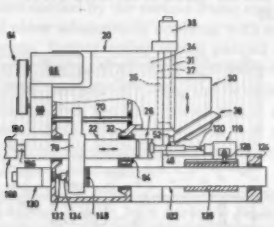
being formed as a substantially U-shaped length of spring wire having an inner loop portion which entirely protrudes into said U-shaped recess and opposed shank portions which partially protrude into said U-shaped recess, such positioning of the spring wire within said groove means facilitating initial grasping and retention of a nut between said shank portions and subsequent inward locking movements of said spring wire with respect to both said groove means and said U-shaped recess in response to contact of the nut with said loop portion, said substantially U-shaped length of spring wire being additionally provided with outwardly flaring tip portions on said shank portions which protrude slightly beyond open ends of the groove means within said U-shaped recess, the diameter of said spring wire being slightly greater than the depth of said groove means so that outward expansion of said spring wire can be only partially accommodated within said groove means whereby a nut can be slidingly engaged within said U-shaped recess between said shank portions of the spring wire and thereafter with the loop portion of said spring wire to cause said outwardly flaring tip portions of the spring wire to slidably engage within said groove means to lock both the nut and the spring wire in place by compression.

4,058,033

AUTOMATIC TURRET LATHE

Heinrich Lahm, Esslingen-Sirnau, and Dieter Gutbrod, Aichwald-Aichschiess, both of Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen, Germany

Filed June 1, 1976, Ser. No. 691,347
Claims priority, application Germany, June 12, 1975, 2526343
Int. Cl.² B23B *3/00*
U.S. Cl. 82—2 R **23 Claims**



1. An automatic turret lathe comprising a stationary headstock, a live spindle supported in said headstock for rotational and axial movement relative thereto, a turret carriage adjustably mounted on said headstock for movement perpendicular to the axis of said live spindle, a turret head supported on said turret carriage for indexing movement about an indexing axis, said turret head being oriented so that its indexing axis intersects the live spindle axis at an acute angle and is constructed to have mounted thereon tools for outside and inside machining of workpieces turned by said live spindle.

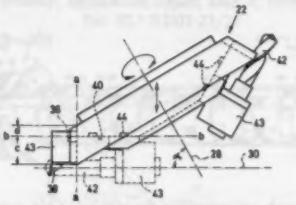
4,058,034

LATHE WITH MULTIPLE TOOL TURRET

Heinrich Lahm, Esslingen-Sirnau, and Dieter Gutbrod, Aichwald-Aichschiess, both of Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen, Germany

Filed June 1, 1976, Ser. No. 691,413
Claims priority, application Germany, June 12, 1975, 2526342
Int. Cl.² B23B *3/00, 29/00*
U.S. Cl. 82—2 R **8 Claims**

1. An automatic turret lathe having a live spindle with an axis of rotation, a turret carriage, and an indexing turret head mounted on said turret carriage for indexing movement about an indexing axis and positioned so that its indexing axis is at an acute angle to the live spindle axis, said turret head having a plurality of tool receivers located at angular distances from each other around said indexing axis for supporting alternately outside machining tools and inside machining tools, the tool receivers for said outside machining tools being located at the periphery of said turret head so as to provide a working position in a first plane perpendicular to said live spindle axis, and



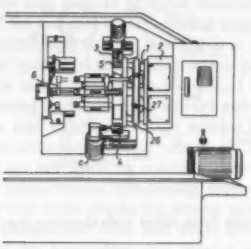
the tool receivers for said inside machining tools being arranged so as to provide a working position in a second plane parallel to said live spindle axis and perpendicular to the plane defining the working position of tool receivers for the outside machining tools.

4,058,035

AUTOMATIC LATHE

Hermann Flisch, Eichholz, Switzerland, assignor to Eunipp AG., Zug, Switzerland

Filed June 30, 1976, Ser. No. 701,123
Int. Cl.² B23B *3/24, 3/00;* B23P *23/00*
U.S. Cl. 82—3 **3 Claims**



1. A multispindle automatic lathe comprising a stand, a rotatable spindle drum supported thereby and further supporting a plurality of spindles and indexable in stepwise rotation from one working station to the next for carrying out a number or machining operations by means of tools associated with said spindle drum, a support opposite the stand and carrying machining means capable of carrying out machining operations additional to those performed with the tools associated with the spindle drum, said machining means receiving workpieces from the spindle drum from a transfer device operatively feeding the same and being disposed outside of a zone occupied by said tools and comprising a workpiece carrier disposed coaxially with the axis of the spindle drum and rotatable in synchronism with same.

4,058,036

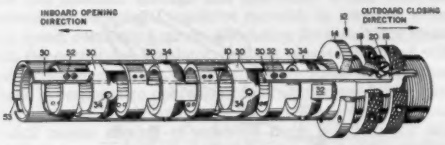
ADJUSTABLE SPINDLE LINER TUBE OR FILLER TUBE

Richard Arnold Austin, 35 Ohio Ave., West Springfield, Mass. 01089

Filed July 9, 1976, Ser. No. 704,047
Int. Cl.² B23B *25/00, 23/02*
U.S. Cl. 82—38 A **17 Claims**

1. An adjustable support for supporting bar or tube stock concentrically relative to the work centerline of a machine tool comprising: a tube, a plurality of variable support opening sections sleeved within and spaced along the axial direction of

the tube, and means for adjusting the variable support opening sections for movement into and out of gripping relation with the stock, the sections cooperantly defining a fixed centerline coincident with the work centerline of the machine, each variable support opening section including a plurality of pairs of fixed puller and pivotal spherical rings disposed in spaced



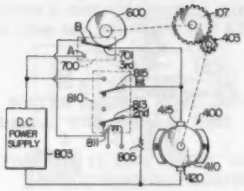
relation to each other, puller fingers movable longitudinally relative to the tube, the spherical rings being pivotable relative to the tube, the puller rings being fixedly mounted on the puller fingers, the spherical rings being actuatable unisonly between non-gripping and gripping positions by the actuation of the puller rings on the spherical rings.

4,058,037

FULL ROTATION TYPE, SHEET WEB SHEARING MACHINE

Sadaji Tashiro, and Yasuyuki Kuroi, both of Kumagaya, Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Mar. 18, 1976, Ser. No. 668,302
Int. Cl.[2] B26D *5/00*
U.S. Cl. 83—70 **28 Claims**



1. A full rotation type, sheet web shearing machine comprising;

a rotary blade having a shearing edge mounted on a rotatable cylindrical shank,

a stationary blade having a shearing edge elastically contacting the edge of the rotary blade, the stationary blade shearing the sheet web with the rotary blade,

means for driving the rotary blade,

means for detecting a rotation angle from a starting position of the rotary blade,

means for braking the rotary blade and means for sending a timing signal of braking to the means for braking and to the means for driving as the rotation angle coincides with a present angle, so as to bring the rotary blade at a predetermined angle to a halt.

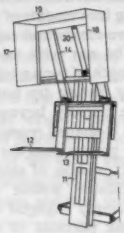
4,058,038

APPARATUS FOR DETACHING A PORTION OF A BODY OF MATERIAL SUCH AS HAY

Lauri Alarik Tenhunen, 74700 Kiuruvesi, Finland

Filed Mar. 11, 1976, Ser. No. 666,141
Claims priority, application Finland, June 2, 1975, 1617/75; July 18, 1975, 2087/75
Int. Cl.[2] B26D *5/12*
U.S. Cl. 83—109 **17 Claims**

1. In an apparatus for detaching from a body of an edible material such as hay a portion of the body which after detachment can be transported to a desired location, a prime mover, frame means carried by said prime mover, and cutting means carried by said frame means for cutting into a body, such as a body of edible material, while carrying out a slicing stroke with respect to the body during penetration thereof, for detaching from said body a portion thereof, in the form of a block, which can then be transported to a desired location, said



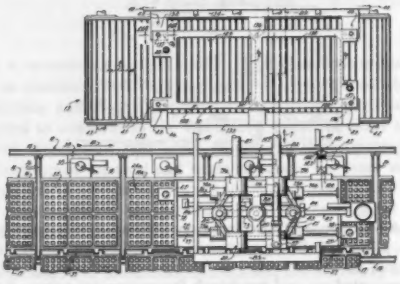
cutting means including a wall structure which terminates in cutting edges for cutting into the body while carrying out said slicing stroke with respect thereto, and said wall structure extending at least in part around said block and determining at least in part the configuration thereof.

4,058,039

WAFFLE TRANSFER MACHINE

Richard R. Schmid, Cincinnati, Ohio, assignor to Lockwood Manufacturing Company, Cincinnati, Ohio

Filed May 20, 1976, Ser. No. 688,129
Int. Cl.[2] A21B *5/02*; A47J *37/01*
U.S. Cl. 83—155 **11 Claims**



1. A waffle transfer machine particularly adapted to transfer baked waffles from a waffle iron conveyor to a transfer conveyor, said machine including

a vacuum head structured to pick waffles by vacuum off successive waffle irons carried by said waffle iron conveyor, said vacuum head being connected to a vacuum source,

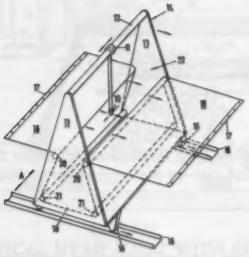
a carriage structure to which said vacuum head is fixed, said carriage structure being adapted to move said vacuum head in a vertical direction over said waffle iron conveyor for picking up waffles off said waffle irons, in a vertical direction over said transfer conveyor for discharging said waffles onto said transfer conveyor, and said carriage structure also being adapted to move said vacuum head in a horizontal direction for reciprocating said vacuum head between a first position over said waffle iron conveyor and a second position over said transfer conveyor, and

a trimming die positioned over said transfer conveyor, said waffles being passed through said trimming die for trimming same into a regular defined geometry upon discharge from said vacuum head onto said transfer conveyor.

4,058,040
SLOTTED WORKTABLE

Martin John Fisher, Milton Keynes, England, assignor to The British Hydromechanics Research Association, England

Filed Apr. 7, 1976, Ser. No. 674,444
Claims priority, application United Kingdom, Apr. 9, 1975, 14619/75
Int. Cl.[2] B26F *3/00*
U.S. Cl. 83—177 13 Claims



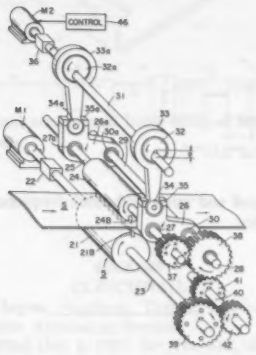
1. A slotted worktable, comprising, a first frame having two oppositely-facing sides, securing means disposed in a horizontal plane and arranged on said oppositely-facing sides of the first frame, a single length of flexible support material extending between said securing means, a second frame situated between said sides of the first frame and movable in a horizontal plane towards and away from said sides, a first pair of parallel rollers carried by the second frame and spaced apart in a horizontal plane substantially coplanar with said plane of the securing means, further roller means carried by the second frame and extending parallel to the first pair of rollers, below said plane of the first pair of rollers, the flexible support material being trained over the first pair of rollers and the further roller means so that said material passes over the first pair of rollers and below the further roller means to define a slot between the first pair of rollers.

11. A worktable for holding a flat workpiece stationary as the same is operated upon by a movable penetrating tool arranged above the workpiece comprising, in combination, a single length of flexible material forming a wide belt having end portions extending horizontally in opposite directions as well as a central portion, a main frame having means for gripping the end portions of the length of material in tension to define a horizontal working plane upon which the workpiece is stationarily supported, first and second rollers spaced from one another and extending transversely of the length of material and tangent to the working plane, the central portion of the length of material being trained downwardly between the rollers to define a depending loop of material with the upper portion of the loop separated by a relatively narrow transversely extending clearance slot, auxiliary roller means at the lower end of the loop for keeping the loop in taut condition, a subframe, means for mounting the subframe for horizontal shifting movement parallel to the working plane, a penetrating tool support above the working plane, the penetrating tool support being mounted on the subframe so that the tool is centered with respect to the clearance slot, the first and second rollers and the auxiliary roller means being fixedly mounted with respect to the subframe so that upon shifting of the subframe to move the penetrating tool relative to the stationary workpiece the slot moves in unison with the tool to provide under-workpiece clearance for the tool regardless of the position of the tool on the workpiece, the subframe being shiftable through a sufficient distance so that the tool may traverse the belt throughout substantially its entire horizontal length thereby enabling accommodative support of a workpiece of substantially the same horizontal dimension as the belt.

4,058,041
ROTARY DRUM TYPE FLYING SHEAR MACHINE

Kunihiro Ito, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Nov. 29, 1976, Ser. No. 745,822
Claims priority, application Japan, Dec. 4, 1975, 50-145362
Int. Cl.[2] B23D *25/12*
U.S. Cl. 83—305 2 Claims



1. In a flying shear machine of the type including a first shear drum provided with a first shear blade cutting edge, a second shear drum provided with a second shear blade cutting edge, said drums being oppositely disposed and having different diameters such that miscuts of stock material can occur between cuts of the material by said cutting edges, drum driving means for continuously driving said drums at speeds such that the tangential speeds of the cutting edges are synchronized with the stock material traveling speed, and drum displacing means for moving said first drum toward and away from said second drum, said cuts being made when said first drum is moved to a position nearest said second drum at which said cutting edges are in registering coincidence to shear the stock material: the improvement comprising motive power means for operating said drum displacing means, said motive power means being independent from said drum driving means, and control means for controlling said motive power means to operate said drum displacing means to cause it to undergo cycles of operation, each cycle including starting at a first shear timing with said first drum in a position remote from said second drum, accelerating said motive power means and hence said drum displacing means in a direction of displacement of the first drum toward the second drum, causing said first drum at a second shear timing to reach said position nearest the second drum, at which said cutting edges assume registering coincidence to shear the stock material and at which said motive power means is at its full velocity. decelerating said motive power means and hence said drum displacing means in a direction of displacement of the first drum to return to said position remote from the second drum at a third shear timing, at which said motive power means stops.

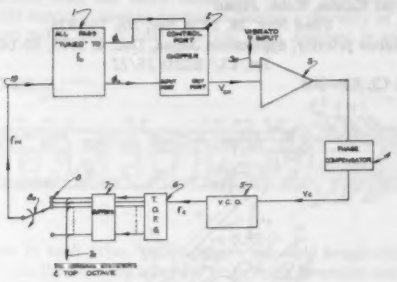
4,058,042
KEY TRANSPOSING ELECTRONIC ORGAN

David R. Wade, Norwood, Ohio, and Walter Munch, Jr., Fort Thomas, Ky., assignors to D. H. Baldwin Company, Cincinnati, Ohio

Filed June 20, 1975, Ser. No. 588,625
Int. Cl.[2] G01H *1/02;* G10C *3/12*
U.S. Cl. 84—1.01 7 Claims

1. A method of transposing, comprising generating a plurality of note signals by frequency division, comparing the phase of any note signal with the phase of the same note signal as processed by an all pass network tuned to a reference fre-

quency, generating a dc control signal as a function of the comparison, generating a clock frequency in response to said



dc control signal and using said clock frequency for said frequency division.

4,058,043

PROGRAMMABLE RHYTHM APPARATUS

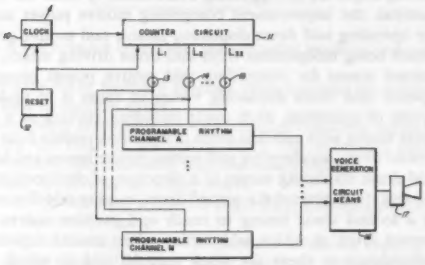
Masashi Shibahara, Kishiwada, Japan, assignor to Nihon Hammond Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1975, Ser. No. 627,262

Claims priority, application Japan, Nov. 1, 1974, 49-126971; Dec. 11, 1974, 49-142929; Dec. 11, 1974, 49-142928; Dec. 11, 1974, 49-142927; Dec. 11, 1974, 49-142926

Int. Cl.² G10F *1/00;* G10H *1/02;* A63J *17/00*

U.S. Cl. 84—1.03 **10 Claims**



1. A programmable rhythm device for use in an electronic musical instrument comprising:

a pulse producing means for generating a sequence of pulses respectively corresponding to each individual beat of a rhythm pattern,

a plurality of rhythm channels each receiving each pulse in said pulse sequence and each of said rhythm channels being individually programmable by an instrument player for producing an output control signal at selectable times corresponding to any desired beat of a rhythm pattern, and,

said plurality of rhythm channels each comprising:

a selection means for generating an enable signal, and,

a plurality of logic circuit means each responsive to the simultaneous occurrence of said selection enable signal and one of said sequence pulses for programming said logic circuit.

4,058,044

ELECTRICAL MUSICAL INSTRUMENT

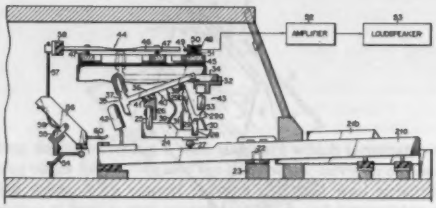
Kazuo Murakami, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed June 26, 1975, Ser. No. 590,557

Claims priority, application Japan, June 29, 1974, 49-74882; Oct. 7, 1974, 49-114673; June 29, 1974, 49-76699[U]; June 29, 1974, 49-76701[U]

Int. Cl.² G10H *3/00, 3/08*

U.S. Cl. 84—1.14 **22 Claims**



1. An electrical musical instrument including:

a plurality of vibratory tone bars arranged side by side in the order of a musical scale, said tone bars having apertures therein.

supporting means for supporting each of said tone bars at their respective nodal points with both ends of each of said tone bars left free, said supporting means for each of said tone bar comprising a pin having a head at one end, said pin being loosely fitted at the middle portion thereof in an aperture of a tone bar at one end of the nodal points thereof, a first damping member elastically engaging that portion of one surface of said tone bar which corresponds to one of the nodal points, and a second damping member elastically engaging that portion of the opposite surface of said tone bar which corresponds to one of the nodal points,

hammers for striking the respective tone bars,

key-operated mechanisms for operating the respective hammers to strike the respective tone bars,

a plurality of mechanical-electrical transducers each corresponding to each of said tone bars and disposed in confronting relation to said tone bars, said transducers generating electric signals in accordance with the vibration of said tone bars, and

means for converting said electrical signals into musical sounds.

4,058,045

PIANO WITH SOUND-ENHANCING SYSTEM

Robert Parry Jennings, Castro Valley, and Kenneth Thomas Aaroe, Hayward, both of Calif., assignors to Solosonic, Hayward, Calif.

Filed Feb. 5, 1976, Ser. No. 655,451

Int. Cl.² G10H *1/00, 3/02*

U.S. Cl. 84—1.14 **18 Claims**

1. In a piano having a main frame, a string-holding frame supported by and inside said main frame and having strings thereon, a keyboard with keys, and a sounding board, the combination therewith of:

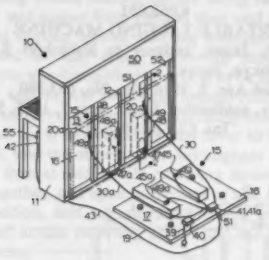
an amplifying assembly, comprising

pickup means mounted on said sounding board for picking up sound directly from said sounding board supported on said piano,

amplifier means supported on said piano and connected electrically to said pickup means,

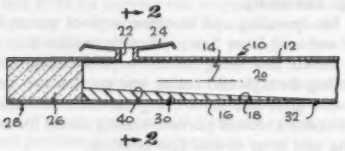
loud speaker means supported on said piano and electrically connected to said amplifier means, and

baffle means secured to said piano main frame for preventing feedback from said loudspeaker means to said sounding



board, said amplifier means and said loudspeaker means being secured to and supported by said baffle means.

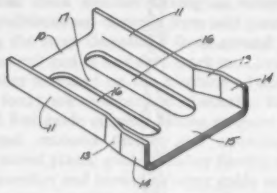
4,058,046
CYLINDRICAL HEAD JOINT WITH ACOUSTIC WEDGING FOR CONCERT FLUTES
Raoul J. Fajardo, P.O. Box 5782, Pasadena, Calif. 91107
Filed Aug. 3, 1976, Ser. No. 711,157
Int. Cl.² G10D *7/02*
U.S. Cl. 84—384 **14 Claims**



1. A flute head joint comprising:
a wall having an embouchure hole therethrough and a closed inner surface defining a hollow cylinder extending along a central axis between opposite ends of the wall;
a closure element disposed to close the hollow cylinder between one end and the embouchure hole; and
a wedge positioned within the hollow cylinder and decreasing continually in cross-sectional area from one end disposed on one side of the embouchure hole to an opposite end disposed on an opposite side of the embouchure hole a substantial distance therefrom to provide an acoustic taper to the hollow cylinder.

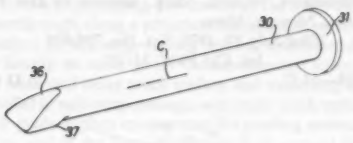
4,058,047
CLAMP NAIL
Francis J. Kramer, Edgewood; Robert G. Rothfuss, Bellevue, both of Ky., and William C. Wise, Pleasant Plain, Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio
Filed May 12, 1975, Ser. No. 576,882
Int. Cl.² F16B *15/00*
U.S. Cl. 85—11 **6 Claims**

1. A clamp nail comprising a channel having a web and marginal flanges extending in the same direction from said web, said web being of constant width over the major portion of its length, and having a relatively short tapered portion which is wider at its leading end in the direction of driving, said flanges extending along the entire length of the nail, including said major portion and said tapered portion, said tapered portion converging from said wider end to said major portion, said tapered portion and converging flanges constituting a transition portion; at least two transversely spaced holes of substantially equal size in said web being symmetrically arranged on opposite sides of the longitudinal axis of the nail, said holes leaving a relatively wide, longitudinally extending column of web material on said axis, said column being of sufficient width to impart strength to the nail in the direction of



driving, the total area of said holes being at least 30% of the area of said web.

4,058,048
CLINCHNAIL
Borje Erling Ingvar Sundberg, Tyreso, Sweden, assignor to Nordisk Kartro Aktiebolag, Sweden
Filed Oct. 1, 1975, Ser. No. 618,369
Claims priority, application Sweden, Oct. 2, 1974, 74123787; Aug. 27, 1975, 75095372
Int. Cl.² E01B *9/12*
U.S. Cl. 85—31 **3 Claims**

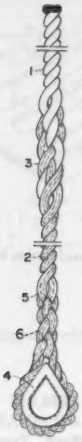


1. A clinch nail comprising:
a. a single elongated shank having a smooth surface throughout its length and a constant cross-sectional configuration throughout said length;
b. a head at one end of said shank;
c. a tip portion at the other end of said shank, said tip portion including two converging surfaces merging to form a substantially straight leading line-like edge extending perpendicularly to, but laterally offset from, the center line of the shank, said line-like edge having a length exceeding the cross-section thickness of said shank, and said tip portion having a length between said constant configuration and said edge which is less than one and one-half times the cross-sectional thickness of said shank.

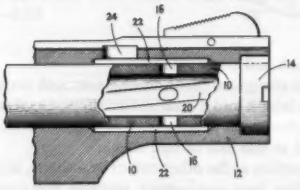
4,058,049
ANCHOR ROPE
Johan H. Bech, 1265 Tanglewood Court, La Salle, Ontario, Canada
Filed Mar. 22, 1976, Ser. No. 669,386
Int. Cl.² D04C *1/12;* **B63B** *21/22*
U.S. Cl. 87—8 **4 Claims**

1. A rope for attaching an anchor thereto comprising a long section of rope made of twisted or braided strands of natural or synthetic fibre, in combination with a short section of rope which forms the anchor attachment end of said rope, which is formed into a loop by means of which the anchor is attached

thereto; said short section of anchor attachment rope being provided with a flexible strand of heavy metal therein for the purpose of adding extra weight to the anchor, without reducing the flexibility of the said long section of rope.



4,058,050
GUN LEVELING DEVICE
Paul E. Brouthers, Monson, Mass., assignor to Dan Wesson Arms, Inc., Monson, Mass.
Filed July 19, 1976, Ser. No. 706,606
Int. Cl.[2] F41C *21/18*
U.S. Cl. 89—14 C **11 Claims**



1. Apparatus for controlling muzzle jump or recoil of a pistol or revolver having a barrel with grooves forming a rifled bore and a shroud with a bore and fitting about the barrel comprising;

means forming a plurality of radially directed passages extending through the wall of the barrel,

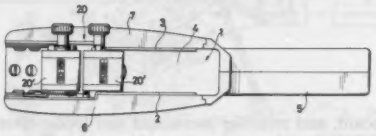
said passages terminating at their inner ends in openings on the inner surface of said barrel, said openings extending parallel to the direction of said grooves,

means forming a channel only in the bore of the shroud to form an expansion chamber between the barrel and shroud and positioned to communicate with the plurality of radially directed passages, and means defining at least one orifice in the upper portion of the shroud extending from the channel to communicate from the chamber to the atmosphere

means for reversing the gas flow in the expansion chamber including said passages disposed at and communicating with a front end of the expansion chamber and said at least one orifice disposed at and communicating with the rear end of the expansion chamber,

the maximum longitudinal distance between said passages and said orifice being greater than the circumferential distance between said orifice and an adjacent passage.

4,058,051
PORTABLE TAGGING MACHINE
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan
Filed Apr. 5, 1976, Ser. No. 673,380
Claims priority, application Japan, Apr. 7, 1975, 50-41244
Int. Cl.[2] B31B *1/90*
U.S. Cl. 93—88 **43 Claims**



1. A tagging machine for tagging articles, comprising:

a casing having a front portion at one end and a rear portion at its opposite end; an article receiving means at said casing one end for receiving an article to be tagged; a grip by which said machine is held, said grip being attached at said casing opposite end; a passageway into said casing from the direction of its said rear portion toward said article receiving means for transmitting a continuous strip of tags therealong;

a lever for operating said machine; a pivot mount for said lever and said lever being pivotally mounted to its said pivot mount and being located in said casing; said lever extending through said casing rear portion and extending near said grip; said lever being movable between a first position and a second portion; biasing means for normally biasing said lever to said first position;

feed means for engaging and feeding a continuous strip of tags along said passageway to said article receiving means; said feed means including pawl means located in and movable along said passageway and being movable toward and away from said article receiving means; said pawl means being engageable with the strip of tags upon movement of said pawl means toward said article receiving means and being disengageable from the strip of tags upon movement of said pawl means in the opposite direction; first link means linking said pawl means to said lever in a manner such that movement of said lever toward its said second position moves said pawl means away from said article receiving means and movement of said lever toward its said first position moves said pawl means toward said article receiving means;

a platen located in said passageway and facing toward a printing means, said platen being provided for having a tag to be printed rest thereupon; printing means facing towards said platen for printing and inscription upon a tag in a strip of tags in said passageway, which tag is the one in the strip then located on said platen; second link means linking said printing means with said lever in a manner such that movement of said lever to its said second position moves said printing means against said platen to print the tag then on said platen and movement of said lever to its said first position moves said printing means off said platen;

tag strip cutting means comprising a cutting blade for cutting the strip of tags; third link means linking said cutting means with said lever in a manner such that movement of said lever to its said second position moves said cutting blade across said passageway and movement of said lever to its said first position raises said cutting blade away from said passageway and away from the strip of tags; said cutting blade being so located and movable that it moves

across said passageway at a location selected to be where neighboring tags in the strip thereof will be joined;

tag attaching means located further along said passageway toward said casing front portion than said printing means and said cutting means; said tag attaching means being positioned at said article receiving means and being adapted to attach together an article to be tagged and a tag then at said article receiving means; fourth link means linking said lever and said tag attaching means in a manner such that upon movement of said lever to its said second position, said tag attaching means engages the article and the tag then at said article receiving means and attaches them together, and upon movement of said lever to its said first position, said tag attaching means is moved away from said article receiving means and the article and the tag therein;

pressure return means engageable with said tag attaching means for forcing said tag attaching means away from said article receiving means; fifth link means linking said pressure return means with said lever such that said pressure return means engages said tag attaching means to force said tag attaching means away from said article receiving means upon said lever beginning to move to its said first position;

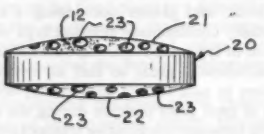
positioning means for a strip of tags, including a stopper movable into and out of said passageway; said stopper being shaped and oriented to be received in a slit between two adjacent tags of a strip thereof located in said passageway; sixth link means linking said strip positioning means and said lever for moving said stopper into and out of said passageway in a sequence of operation of said stopper such that said stopper is in said passageway when said lever is in said first position and when said lever is moving to said second position, is out of said passageway when said lever has moved to said second position and returns to be in said passageway as said lever is returning from said second position to said first position.

4,058,052

COOKING GRILL AND BRIQUETTES THEREFOR

Mark M. Hart, 37 Huntleigh Woods, St. Louis, Mo. 63131

Filed Aug. 30, 1971, Ser. No. 176,088
Int. Cl.[2] A23P *1/00*
U.S. Cl. 99—646 R **2 Claims**



1. A solid liquid impervious aluminum briquette having two, oppositely disposed, convex surfaces having liquid retaining means thereon, and a coating of char on at least one of said surfaces.

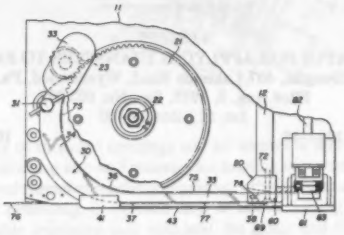
4,058,053

STRAP GUIDE FOR STRAPPING MACHINE

Francis J. Patterson, Calumet City, and Louis M. DeFilippo, Chicago Ridge, both of Ill., assignors to Interlake, Inc., Oak Brook, Ill.

Filed Jan. 5, 1977, Ser. No. 756,872
Int. Cl.[2] B65B *57/10, 13/04, 13/34*
U.S. Cl. 100—26 **16 Claims**

12. Strap guide apparatus for use in a strapping machine for applying plastic strap around an object with the leading end of the strap overlapping and spaced from the supply portion thereof in a strap-sealing region, said strap guide apparatus comprising a plastic feed track member carried by the machine and having an entry end disposed adjacent to an associated strap supply and an exit end, said feed track member having an inner track surface for guiding the strap therealong from the associated strap supply to the exit end of said feed track member, said feed track member having an outer track surface spaced a predetermined distance from said inner track surface for guiding the strap therealong from around the associated object to the exit end of said feed track member, a first plastic guide member mounted on the machine adjacent to the exit end of said feed track member and adjacent to the strap sealing region, said first guide member having an outer surface with a strap channel recessed therein and extending the length thereof, a second plastic guide member fixedly secured to said first guide member and having an inner guide surface disposed in facing engagement with said outer surface of said first guide



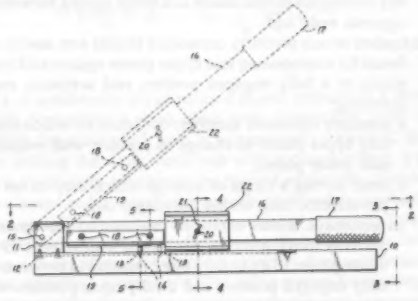
member and substantially coplanar with said exit end of said feed guide surface, said inner guide surface covering said strap channel and cooperating therewith to define a strap guide passage for accommodating movement of the strap longitudinally therethrough along a predetermined path from said inner track surface to the strap-sealing region, said second guide member having an outer guide surface disposed substantially coplanar with said outer track surface and extending substantially parallel to said strap passage, said outer track surface and said outer guide surface cooperating for guiding movement of the leading end of the strap therealong from around the associated object and back to the strap-sealing region in overlapping relationship with the portion of the strap emerging from said strap passage.

4,058,054

CAN FOLDER AND FLATTENER

Stanley Markman, 7 Copley Court, Wayne, N.J. 07470

Filed Oct. 4, 1976, Ser. No. 729,165
Int. Cl.[2] B30B *7/00*
U.S. Cl. 100—233 **4 Claims**



1. A can folding and flattening device comprising:

a. A base plate having apertures formed therein for receiving a pin which functions as a can positioner;

b. Arm support means attached to said base plate;

c. A pivotable handle operatively associated with said base plate and attached to said arm support means whereby

said handle can be rotated toward and away from said base plate;

d. A can folding anvil secured to said handle by means of a stud and wing nut wherein said can folding anvil comprises a first folding face and a second folding face whereby upon loosening of said wing nut said can folding anvil can be rotated to expose either of said faces to said base plate and wherein said first folding face and said second folding face are of different widths; and

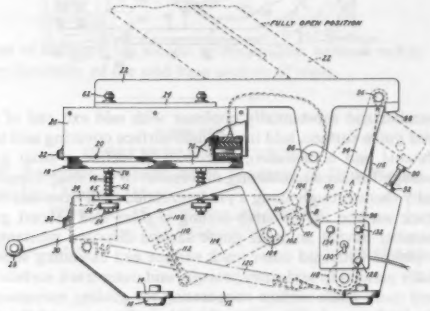
e. A can flattening anvil secured to said handle whereby upon rotation of said handle toward said base plate a folded can, positioned on said base plate, is caused to be flattened, said can flattening anvil having the same width as said base plate.

4,058,055

APPARATUS FOR APPLYING TRANSFERS TO FABRICS

Leon L. Douglas, 407 Lakeside Road, Wynnewood, Pa. 19096

Filed Aug. 5, 1975, Ser. No. 602,072
Int. Cl.[2] B44B *5/00*
U.S. Cl. 101—10 **10 Claims**



1. An apparatus for applying designs comprised of thermosetting ink from a carrier material to a fabric which comprises:

a frame;

a lower platen connected to said frame by means for permitting the variation of the vertical and angular position between said platen and said frame;

an upper platen, including means for heating said upper platen to a particular temperature, connected to an arm by means for permitting the variation of the vertical and angular position between said platen and said arm when said arm is substantially horizontal, said arm being pivotally connected to said frame at a point spaced between its opposite ends; and

actuation means pivotally connected to said arm and to said frame for compressing said upper platen against said lower platen to a fully engaged position said actuation means including;

a manually operative member, operation of which causes said upper platen to change its position with respect to said lower platen;

a timer having a range of settings which may be set at a pre-selected time within the range; and

an automatic means acting in response to the timer for partially moving said upper platen with respect to said lower platen to a partially open position in between said fully engaged position and a fully open position when the pre-selected time has passed,

thereby permitting disengagement of said platens at said pre-selected time in such a manner so as to avoid smearing of said thermosetting inks of said fabric;

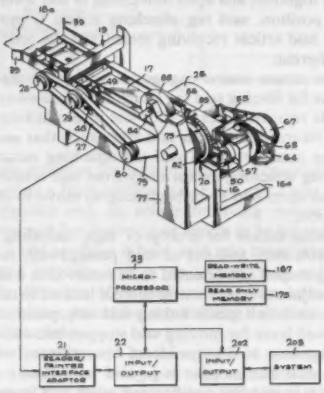
thereby providing an apparatus for applying heat and pressure to the fabric, design and its carrier material placed therebetween, and moving said upper platen away from said lower platen to said fully open position, and positions therebetween including said partially open position.

4,058,056

MICROPROCESSOR CONTROLLED CARD READER/PRINTER

Irwin Rubin, Oxnard, Calif., assignor to Sensor Technology, Inc., Chatsworth, Calif.

Filed June 21, 1976, Ser. No. 698,268
Int. Cl.[2] B41J *1/22*
U.S. Cl. 101—93.19 **17 Claims**



1. A card reader/printer system comprising:

a stationary read head for sensing marks on said card,

a printer for printing characters onto said card,

a transport mechanism including:

first transport means for transporting said card first past said read head at a uniform rate, said read head sensing said marks as said card is transported past said read head, and

second transport means for then transporting said card incrementally past said printer in steps equal to the distance between adjacent print positions so that consecutive print positions on said card are aligned with said printer, said printer comprising a motor driven, substantially continuously rotating type wheel containing a font of type, the rotational rate of said type wheel being sufficiently great so that an entire set of type characters in said font is successively available to be printed at each print position during the dwell time of said card between consecutive transport steps imparted by said second transport means, and

a processor for directing said printer to print on said card during said incremental transport a message that is responsive to data read from said, said processor including:

first processor means, coupled to said first transport means and to said read head, for entering data read from said card into a memory in storage locations corresponding to the locations of marks on said card,

second processor means for providing, in response to said stored read data, a set of write data to be printed onto said card, and for storing this write data in storage locations of a memory corresponding to the locations in which said write data is to be printed on said card, and

third processor means, conditioned for operation by each successive transport step of said second transport means, for comparing each type wheel character in position to be printed with the write data character stored in the memory location corresponding to the current print location of said card, and for directing

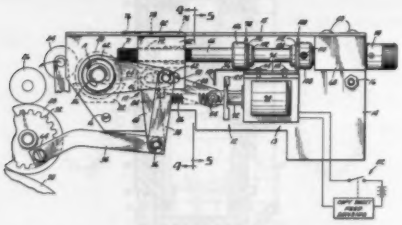
printing of said character when the compared characters are the same.

4,058,057

MOISTURE METERING CONTROL APPARATUS

Otto G. Milan, Schaumburg, and Edward J. Klich, Chicago, both of Ill., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Mar. 9, 1977, Ser. No. 775,909
Int. Cl.² B41F *7/40*; B41L *25/16*
U.S. Cl. 101—148 **8 Claims**



1. A lithographic duplicating machine comprising:
a master cylinder;
fountain means including a fountain roller for supplying dampening fluid to a master on the master cylinder;
a drive element; and
a control means for metering the rate of feed of the fluid, comprising:
an actuating arm mechanically associated with the fountain roller for rotating the same unidirectionally;
linkage means for oscillating the actuating arm and rotating the fountain roller in intermittent increments, said linkage means comprising:
a first link supported for swinging movement about a pivot means associated with the actuating arm;
a second link pivotably connected with the first link and supported for swinging movement about a fixed pivot;
an operating means for imparting swinging movement to the first and second links as a unit about the fixed pivot in response to movement of the drive element;
means for adjusting the linkage means with respect to its operation in a first mode including means to adjust the position of the fixed pivot to a selected normal position to set the magnitude of the incremental motions of the fountain roller to a desired value by infinitesimal degrees to control the feed of dampening fluid during a printing operation; and
means for moving the fixed pivot, independently of the setting of the adjusting means, between the selected normal position as determined by the adjusting means, and a low-moisture position closer to the axis of the pivot means, providing operation of the linkage means in a second mode in which the fountain roller is rotated in increments of less magnitude than those which characterize operation in the first mode.

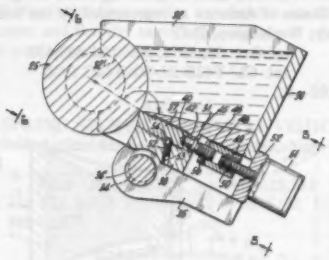
4,058,058

INK FOUNTAIN FOR PRINTING PRESSES

Walter G. Hantscho, Pound Ridge, N.Y., assignor to George Hantscho Company, Inc., Mount Vernon, N.Y.

Filed Feb. 26, 1976, Ser. No. 661,739
Int. Cl.² B41F *31/04*
U.S. Cl. 101—365 **2 Claims**

1. An ink fountain for a printing press comprising a fountain roller and cooperating reservoir, said reservoir including a pair of end walls, a rear wall and a bottom wall and bottom plate extending between said end walls, said bottom plate slidably carrying a plurality of keys in coplanar contiguous relationship, reversible motors carried by said rear wall and having threaded shafts, threaded means carried by each of said keys and engaging a motor shaft for moving said key toward and away from said roller and thus forming a metering gap, said bottom wall overlying said keys and said keys and bottom wall each forming an angle with a tangent to said roller at said metering gap of at least 60°, each of said keys including a recess on the underside thereof and said bottom support includes a



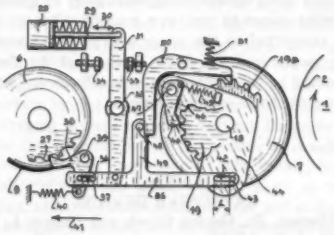
plurality of threaded openings and set screws in said openings and protruding into said recesses for limiting movement of said keys, said threaded means comprising a threaded stud secured to and extending from each key, a sleeve having one end threadably engaging said stud and the other end threadably engaging said motor shaft, and means for adjustably fixing said sleeve relative to said stud.

4,058,059

MECHANISM FOR CLEANING A CYLINDER OF A PRINTING PRESS

Hans Jacob Moestue, Osteraskroken 9, N-1345 Osteras, Norway

Filed Sept. 11, 1975, Ser. No. 612,324
Claims priority, application Norway, Sept. 11, 1974, 743261; Aug. 22, 1975, 752534; Germany, Aug. 27, 1975, 2538105
Int. Cl.² B41F *35/02*
U.S. Cl. 101—425 **11 Claims**



1. A mechanism for cleaning a driven cylinder of a printing press comprising a wash cloth web. a magazine roller from which the wash cloth web is incrementally unwound, means for wetting the wash cloth web with a cleaning fluid, a pressure mechanism which may be pressed against the cylinder to be cleaned and over which the wash cloth web is conducted, a take-up roller upon which used portions of the wash cloth web are wound up, and means for moving the pressure mechanism into and out of contact with the cylinder, the pressure mechanism including a pressure roller, drive means for moving the pressure roller through a constant angle for each increment of the wash cloth web, and secondary drive means including a slip clutch connecting the pressure roller to the take-up roller, the secondary drive means being such that the angle of rotation of the take-up roller subtends an arc the length of which is at least equal to the length of arc subtended by the concurrent angle of

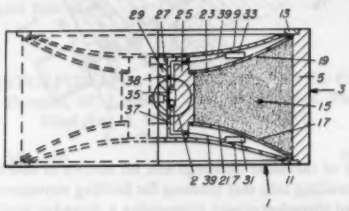
rotation of the pressure roller whereby a constant predetermined tension is maintained in the wash cloth web.

4,058,060

GRAVITY-DEPLOYED MUNITION WITH A MECHANICAL GRAVITY-CONTROLLED SWITCH

Ferdinando V. Dukic, Lake Hopatcong, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1975, Ser. No. 627,175
Int. Cl.² F42B *21/00*; F42C *9/00*
U.S. Cl. 102—8 **4 Claims**



1. In a land mine comprising a housing having two opposite external ends and adapted to be deployed and come to rest by gravity on either of said ends; said mine further comprising a separate explosive charge at each of said ends, and fuze means in said housing for selectively initiating the upper charge only, in response to a firing signal; said fuze means comprising:

a gravity-controlled mechanical switch including a body formed with an elongated cavity oriented transverse to said ends and having two spaced outlet passages and an intermediate inlet passage, and a solid weight slidable in said elongated cavity;

a separate firing train connecting each of said outlet passages to one of said charges; and

firing means connected to said inlet passage for applying an explosive signal wave to said switch;

said weight being slidable along said cavity by gravity, when said mine comes to rest, to a position wherein the firing train connected to the upper charge is exposed to said firing means and the firing means and the firing train connected to the lower charge is effectively isolated by said weight from said firing means.

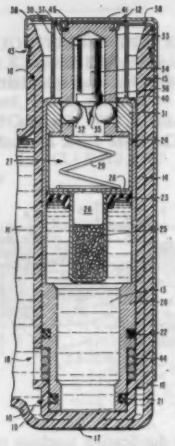
4,058,061

EXPLOSIVE DEVICE

Dana L. Mansur, Jr., Garden Grove, and Thomas L. Murphy, Los Gatos, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed June 17, 1966, Ser. No. 558,335
Int. Cl.² F42B *23/28*
U.S. Cl. 102—8 **8 Claims**

7. An explosive device comprising a sealed enclosure defining a cavity having a flexible wall, a fluid explosive material disposed within said cavity, a striker within said enclosure, pyrotechnic igniter material disposed within said enclosure in spaced relation to said striker, bias means biasing said striker towards the pyrotechnic igniter material, retaining means retaining said striker in a retracted position spaced from the pyrotechnic igniter material, and pressure-operable means responsive to an increase in pressure of said explosive material for releasing said striker from said retaining means, whereby upon an increase in pressure on said flexible wall the pressure condition of the explosive material increases within said cavity to operate on said pressure-operable means thereby releasing said striker from said retaining means to permit said bias means to urge said striker into contact with said pyrotechnic igniter



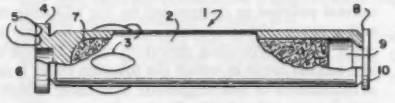
material to ignite said pyrotechnic material for detonating the explosive material.

4,058,062

POWERHEAD CARTRIDGE

Rhett McNair, Honolulu, Hawaii, assignor to Aqua Craft, Inc., San Diego, Calif.

Division of Ser. No. 581,660, May 28, 1975, abandoned, which is a continuation of Ser. No. 381,593, July 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 98,354, Dec. 17, 1970, Pat. No. 3,747,247. This application Mar. 21, 1977, Ser. No. 779,910
Int. Cl.² F42B *5/02*
U.S. Cl. 102—38 **8 Claims**



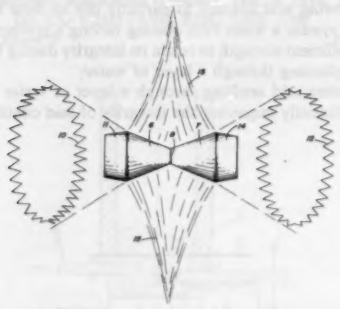
1. Underwater powerhead firearm apparatus comprising a cartridge having a head piece and a base primer piece, wherein the head piece comprises a rifle cartridge casing blank having a cylindrical wall joined integrally with an impervious flat, radially extending head, propellant powder within the cylindrical wall, and wherein the primer piece comprises a cartridge casing having a relatively short cylindrical wall inserted within an open end of the rifle cartridge casing, an integrally formed base joined with the short cylindrical wall, and a primer inserted in the base for firing into powder disposed within the cylindrical wall, an open end edge of the rifle casing being necked down around a joint of the base and small cylindrical wall, tightly sealing the cartridge.

4,058,063

SHAPED CHARGE ROD WARHEAD

William M. Hurst, Socorro, N. Mex., assignor to The Unites States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 18, 1968, Ser. No. 777,213
Int. Cl.[2] F42B *13/10*
U.S. Cl. 102—56 SC 3 Claims



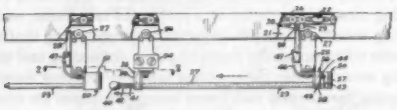
1. A warhead comprising:
an elongated explosive charge having portions diverging from the longitudinal center of said charge and converging portions adjacent the longitudinal ends of said diverging portions;
means for initiating said explosive charge at a position along its length;
at least one expanding rod structure mounted on each of said converging portions substantially spaced from said initiating means;
the diverging portions of said explosive charge between said initiating means and said rod structures being shaped so that as a detonation front travels from said initiating means toward said rod structures the explosive energy of said portions is substantially focused in a desired plane.

4,058,064

POWER AND FREE CONVEYOR SYSTEM WITH SPACED APART ACTUATION AND ENGAGEMENT MEANS

Richard J. Wilder, Sterling Heights, and Ivan Wurfel, Warren, both of Mich., assignors to American Chain & Cable Company, Inc., Bridgeport, Conn.

Continuation of Ser. No. 593,650, July 7, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 761,412
Int. Cl.[2] B65C *17/42;* B61B *10/02*
U.S. Cl. 104—172 S 16 Claims



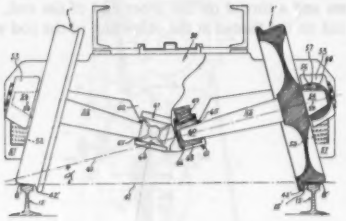
1. In a conveyor system, the combination comprising
a conveyor track,
a conveyor movable along said track,
a free track,
a plurality of carriers movable along the free track,
said conveyor having longitudinally spaced pusher and holdback dogs mounted thereon,
each said carrier comprising spaced apart wheeled trolleys and means interconnecting said trolleys for pivotal movement about vertical axes through said trolleys,
a trailing trolley having a pusher movably mounted thereon for movement into and out of the path of the pusher and holdback dogs,
a bumper,
said bumper being mounted for movement on the leading trolley of said carrier and that engages and is moved by a preceding carrier or an obstacle,
and means interconnecting said bumper and said retractable pusher and operating upon engagement of the bumper with the preceding carrier or obstacle to displace said bumper and thereby move said pusher out of the path of said pusher and holdback dogs.

4,058,065

SPRING STUB AXLE RAILWAY VEHICLE

Arthur Seifert, Box 41, Sound View Station, New York, N.Y. 10472

Filed Oct. 23, 1975, Ser. No. 625,261
Int. Cl.[2] B60B *35/14;* B61F *3/16, 5/28, 5/38*
U.S. Cl. 105—180 5 Claims



1. In a load carrying truck having side frames for a vehicle traveling on rails having standard heads provided with conventional horizontal running surfaces, paired half axles, each having mounted on the outer portion thereof a rail wheel generally disposed at right angles thereto, each of said half axles being rigid and straight and disposed so that its straight longitudinal axle is inclined downwardly and inwardly at a given vertical angle to the horizontal to tilt its associated rail wheel inwardly from the vertical at an angle approximating said given vertical angle, each of said rail wheel being rigid and fixedly connected to its associated half axle, and each of said rail wheels having a tire portion constituted of a rail flange and a rail riding surface extending outwardly from said flange, said riding surface having a generally frusto-conical configuration and converging inwardly toward said rail flange to provide a transverse line of contact with the horizontal running surface of a conventional rail head disposed substantially horizontally and substantially at said given vertical angle to the central longitudinal axis of its associated half axle, and so that said rail flange is inclined upwardly and inwardly from the inner end of such horizontal transverse line of contact, first means pivotally and rotatably holding the outer portion of each of said half axles in the truck side frames, and second means resiliently mounting said half axles between said two first means to said truck to enable articulation of such half axles about the pivots provided by said first means and to confine such articulation to a given range in a generally vertical plane.

4,058,066

ADJUSTABLE TABLE

Nicholas M. Altman, 10 Mountain Way South, West Orange, N.J. 07052

Filed June 30, 1976, Ser. No. 701,289
Int. Cl.[2] A47B *27/14*
U.S. Cl. 108—9 1 Claim

1. An adjustable table comprising:
a. A pair of front legs,
b. A first transverse bar rigidly attached at opposite ends to

the front legs and holding them in spaced, generally parallel relation to each other,

c. A pair of mounting brackets attached to the front legs,

d. A pair of rear legs pivotably mounted on the mounting brackets,

e. A second transverse bar rigidly attached at opposite ends to the rear legs and holding them in spaced, generally parallel relation to each other,

f. The pair of rear legs pivotable to lie in the plane defined by the front legs,

g. Portions of the mounting bracket positioned to stop the pivoting of the rear legs when they are extended from the front legs sufficiently to sustain the front legs in a standing position together with the rear legs,

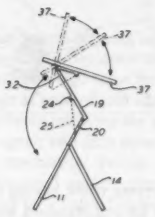
h. A pair of upper legs pivotably attached to the front legs at one end and pivotable around the front legs.

i. Control-arm brackets attached to each of the upper legs,

j. Slotted control arms attached to each of the control-arm brackets,

k. A first rod passed through the first transverse bar, having a head at one end engaged with a slot in one of the control arms and a thread on the other end of the rod,

l. A nut on the thread at the other end of the rod which end



is engaged with the slot in the other control arm, whereby the attitude of the upper leg may be affirmatively fixed in an elected position with respect to the front legs when the upper leg is pivoted on its front legs and the nut is tightened,

m. A table,

n. A pair of table brackets attached to the back of the table,

o. The table brackets pivotably attached to the other end of the upper legs,

p. A third transverse bar rigidly attached at opposite ends to the upper legs and holding them in spaced, generally parallel relation to each other,

q. A second pair of slotted control arms attached to each of the table brackets,

r. A second rod passed through the third transverse bar, having a head at one end engaged with a slot in one of the second control arms and a thread on the other end of the second rod,

s. A nut on the thread at the other end of the second rod which end is engaged with the slot in the second control arm, whereby the attitude of the table with respect to the upper legs may be affirmatively fixed with respect to the upper legs when the table is pivoted as the nut on the second rod is tightened.

4,058,067

TREATMENT OF SEEDLINGS

John F. Wright, North Tonawanda, and Terrance M. Cannan, Depew, both of N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 580,571, May 27, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 739,399

Int. Cl.² A01G *1/00*; A01C *1/00*; A01N *17/00*

U.S. Cl. 111—1 **2 Claims**

1. A method for pretreating and planting a live paddy rice seedling to provide post-planting protection of the seedling from insect attack which comprises:

a. Applying to the root system of said seedling prior to planting an aqueous mixture of (1) 2 to 25% of a water soluble hydrophylic polymer selected from gelatin, polyvinyl alcohol, and natural gums; and (2) an insecticidally effective amount of a contact and systemic insecticide, said amount being sufficient to provide insect control for an extended period after planting;

b. Allowing said mixture to partially dry to form over the root system a water-rich coating having a protective skin of sufficient strength to retain its integrity during handling and planting through a layer of water;

c. Planting said seedling through a layer of water without substantially impairing the integrity of said coating.

4,058,068

SOIL CULTIVATING AND SOWING IMPLEMENT

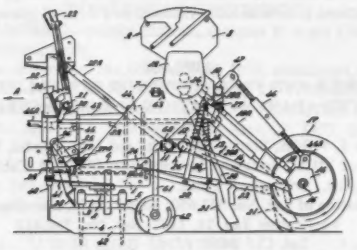
Ary van der Lely, Maasland, and Cornelis Johannes Gerardus Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N. V., Maasland, Netherlands

Filed Dec. 23, 1975, Ser. No. 643,839

Claims priority, application Netherlands, Dec. 30, 1974, 7416983

Int. Cl.² A01B *33/00*

U.S. Cl. 111—36 **30 Claims**



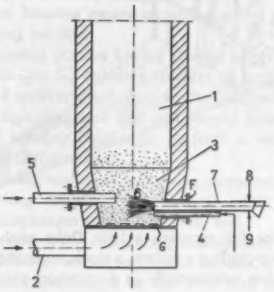
1. A rotary harrow comprising a frame and a plurality of soil working members mounted on a portion of said frame, said soil working members being mounted on corresponding shafts and rotatable about upwardly extending axes defined by said shafts, driving means connected to rotate said soil working members, a coupling member on said frame being positioned for connection to a prime mover, at least one supporting ground wheel being pivotably connected to the implement by arm means adjacent the rear of said frame portion and at a level higher than said frame portion, adjusting means interconnecting said wheel with said frame portion, said wheel being vertically displaceable by said adjusting means and turnable about the pivot connection of said arm means to the implement, whereby the relative position of the wheel's rotary axis with respect to said frame portion can be changed, said adjusting mechanism having fixing means that secures said wheel and arm means in a fixed, non-pivotable position with respect to said frame portion.

4,058,069

PROCESS AND APPARATUS FOR INCINERATING SUBSTANCES IN A FLUIDIZED THERMAL REACTION FURNACE

Helmut Bäing, Dortmund; Gerd Oberschachtsiek, Holzwickede; Horst Grenzing, Wegberg-Beeckerwald, and Peter Meurer, Herdecke-Ende, all of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Filed Nov. 21, 1975, Ser. No. 634,079
Claims priority, application Germany, Dec. 3, 1974, 2457029
Int. Cl.[2] F23D *19/02*; F23G *5/00, 7/04*
U.S. Cl. 110—8 F 2 Claims



1. In a thermal reaction furnace for incinerating substances, the process comprising

a. providing a fluidized bed of small, granular, solid particles,

b. introducing combustion air to the fluidized bed to keep the bed above the fluidization point,

c. igniting a flame before fuel is fed to the cold fluidized bed and directing said flame into the interior of the lower third of the bed,

d. delivering to the fluidized bed in opposed relation to said flame substances to be incinerated, and

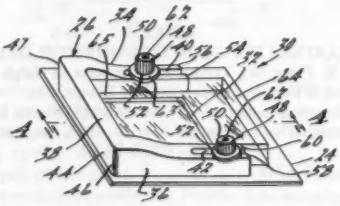
e. feeding fuel to said ignition flame in parallel closely arranged fashion thereto after the ignition flame has burned reliably.

4,058,070

SEE-THROUGH SEWING GAUGE

Edna Jones, 20211 Charleston Ave., Detroit, Mich. 48203

Filed Sept. 7, 1976, Ser. No. 720,881
Int. Cl.[2] D05B *35/10*
U.S. Cl. 112—153 10 Claims



1. A see-through sewing machine gauge adapted to enable an operator to accurately control the distance between the edge of material being sewn and the line of stitching and simultaneously monitor the condition of a bobbin thread supply, said gauge comprising:

a throat plate having an opening provided therein, said opening being positioned so as to afford a view of said bobbin thread supply when said throat plate is in an operative relationship to said sewing machine;

a gauge member surrounding at least a portion of said opening;

means adjustably securing said gauge member to said throat plate; and

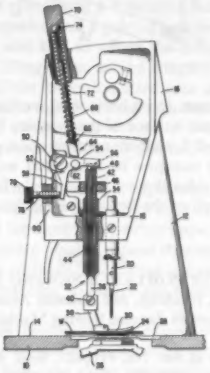
a transparent member retained by said gauge member and overlying said opening so as to prevent objects from interferring with said bobbin thread supply and enable visual monitoring of said bobbin thread supply.

4,058,071

SEWING MACHINE PRESSER BAR MECHANISM

Earl F. Dunn, Edison; Henry Erskine, Somerville, both of N.J., and Edward Hooper, Staten Island, N.Y., assignors to The Singer Company, New York, N.Y.

Filed Dec. 22, 1976, Ser. No. 753,338
Int. Cl.[2] D05B *29/02*
U.S. Cl. 112—235 10 Claims



1. A presser mechanism for a sewing machine having a frame including a head overlying a work support, said mechanism comprising a presser bar having a presser foot on one end slidably journaled for endwise movement in said head, a force transfer member mounted in said head, first resilient means acting between said presser bar and said force transfer member for normally urging said presser bar toward the work support and said member away from the work support, a second resilient means acting between said head and said force transfer member for urging said member toward the work support with a force greater than that of said first resilient means, a stop acting of said force transfer member in opposition to the urging of the second resilient means for limiting the extent to which said member is urged toward the work surface thereby to isolate the presser bar and first resilient means from the second resilient means until a predetermined force on said first resilient means is exceeded, and means for adjusting said stop to change the predetermined force.

4,058,072

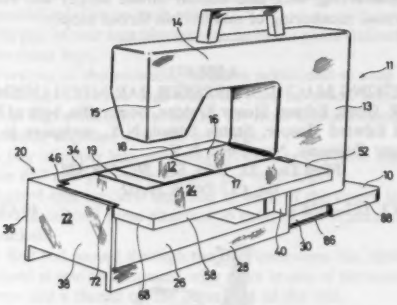
EXTENSION TABLE FOR SEWING MACHINES

Hitoshi Ishikawa, Toyota; Kimihiko Yamamoto, Nagoya; Toshio Sawada, Okazaki, and Takahiko Kasahara, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Nov. 16, 1976, Ser. No. 742,102
Claims priority, application Japan, Nov. 25, 1975, 50-159669[U]
Int. Cl.[2] D05B *73/10*
U.S. Cl. 112—258 6 Claims

1. The combination with a sewing machine of the portable type upstanding upon a base plate, of an extension table arrangement for enlarging the working area provided by an upper flat surface of a raised bed of the machine in which the bobbin mechanism is housed, said extension table arrangement

comprising a table, a support structure for said table slidable along said base plate between storage and working positions of said table, and means pivotally mounting said table on said support structure for movement from a vertical storage position along one side of said machine for storage with said machine within a case, to its horizontal working position co-planar with the upper surface of the machine bed, said table having an elongated L-shaped configuration oriented such that when said table occupies its horizontal working position the short and long sides thereof respectively lie adjacent the end and one frontwall of the bed of the machine.

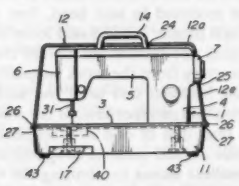


4,058,073

CASE FOR PORTABLE SEWING MACHINES

Susumu Hanyu, Hachioji, and Takashi Amano, Tokyo, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 610,407, Sept. 4, 1975, Pat. No. 4,037,549. This application Sept. 24, 1976, Ser. No. 726,421
Claims priority, application Japan, Sept. 10, 1974, 49-108150
Int. Cl.² D05B *75/00*
U.S. Cl. 112—258 **7 Claims**



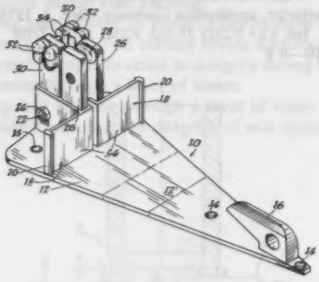
1. A case for a portable sewing machine of the type having a work supporting rectangular bed, a standard secured to said bed, a bracket secured to said standard and spaced from said bed, a flywheel mounted on said standard adjacent to said bracket, and a handle mounted on the top of said bracket, comprising a hollow base having an open top defined by an upper marginal portion and being arranged to receive said bed of the sewing machine, said base being rectangular and having a bottom wall and four side walls extending upwardly from said bottom wall; a separate cover having a top wall and four side walls extending downwardly from said top wall said cover having an opening provided in said top wall through which said handle of the sewing machine, whose bed is supported by said base, extends so that said case can be lifted through the medium of the machine by way of said handle, said cover having a second opening through which said flywheel of the sewing machine extends, said cover further having a lower open end defined by a lower marginal portion abutting against said upper marginal portion of said base without being fastened thereto; and means securing said base to said bed.

4,058,074

ANCHOR CHOCK

Daniel Comstock Hungerford, North Palm Beach, Fla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Feb. 11, 1974, Ser. No. 441,660
Int. Cl.² B63B *21/22*
U.S. Cl. 114—210 **3 Claims**



1. A device for securing a twin fluke anchor having an anchor body including a crown, a stock, a pivotable shank, and a pair of flukes substantially in a common plane, the device comprising:

base supporting means;

means connected to said base supporting means for engaging said anchor body;

resilient shank-actuated clamp connector means connected to said base support means for resiliently clamping said pivotable shank to said base supporting means;

said resilient connector means includes a pair of upwardly projecting resilient fingers, each finger engageable on one side of said shank, said fingers resiliently engageable to said shank for holding said shank in a predetermined position;

said fingers include an upper flanged portion protruding laterally inward toward each other, said lateral flanged portions separated by a distance less than the width of said shank, said shank moveable to a position between said fingers, whereby the flange portions will prevent upward, vertical motion of said shank; and

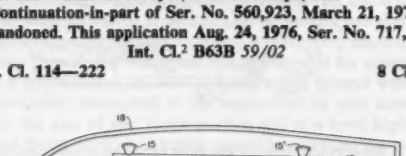
resilient shank engaging means moveable laterally outwardly from said shank when engaged with said shank, said resilient means having a fluke engaging means whereby said flukes are engaged to said resilient means whenever said shank is positioned between said resilient means.

4,058,075

MARINE LIFE GROWTH INHIBITOR DEVICE

Donald R. Piper, Sr., Tampa, Fla., assignor to Ralph M. Guito, Jr. and Walter L. Hooper, both of Tampa, Fla.

Continuation-in-part of Ser. No. 560,923, March 21, 1975, abandoned. This application Aug. 24, 1976, Ser. No. 717,191
Int. Cl.² B63B *59/02*
U.S. Cl. 114—222 **8 Claims**



1. A marine life growth inhibitor device primarily intended

for use in combination with a boat hull, comprising in combination:

vibratory means comprising speaker means and speaker housing means for housing said speaker means, said speaker means including a speaker diaphragm having a first and a second speaker diaphragm side, said speaker diaphragm being moveable relative to said frame upon application of electrical power to said speaker means for transferring electrical energy into acoustical energy;

means for mounting said speaker means in said speaker housing means enabling acoustical energy to be directed from said second side of said speaker diaphragm adjacent the first side of the speaker diaphragm;

said speaker housing means including a first and a second speaker housing portion;

said first housing portion having a liquid impermeable housing diaphragm for enabling transfer of acoustical energy from said speaker diaphragm to the boat hull;

means for mounting said first and second housing portions and said housing diaphragm to form a water repellent speaker housing means;

means mounting said speaker housing means on the boat hull for enabling transfer of acoustical energy from said speaker diaphragm to the boat hull; and

connection means for connecting said speaker means to an electrical power source to transfer acoustical energy from said speaker diaphragm to the boat hull to inhibit the growth of marine life on the exterior of the boat hull.

4,058,076

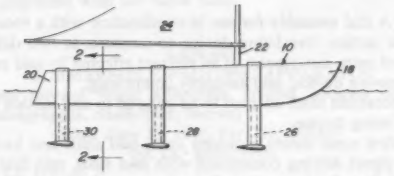
HULL FOILS WITH HYDRODYNAMIC RIGHTING FORCES

Philip J. Danahy, 12801 Prestwick Drive, Oxon Hill, Md. 20022

Filed Sept. 2, 1976, Ser. No. 720,077

Int. Cl.[2] B63B *1/28*

U.S. Cl. 114—281 **15 Claims**



1. In combination with a boat having front and rear ends, a bottom and upwardly projecting sides extending upwardly to an elevation spaced above the static water line of said boat, a depending central strut projecting downwardly from said bottom, a pair of elongated, longitudinally straight and downwardly convergent opposite side flexible foils including leading and trailing longitudinal edges facing in front and rear directions, respectively, of said boat, first anchor means anchoring the lower ends of said foils to the lower end portion of said strut, and second anchor means anchoring the upper end portions of said foils to upper portions of the corresponding sides of said boat above said static waterline, said foils extending lengthwise along generally straight paths and being free of support from said boat and each other intermediate said first and second anchor means and thereby being free to twist and bow, slightly, between said first and second anchor means.

4,058,077

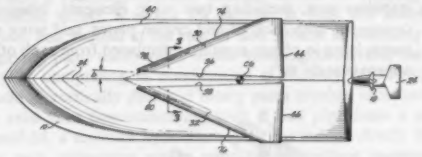
POWER BOATS WITH HYDRODYNAMIC LIFTING DEVICES

Sten E. Johansson, 5711 S. 152nd Place, Seattle, Wash. 98188

Continuation-in-part of Ser. No. 535,719, Dec. 23, 1974, Pat. No. 3,980,035. This application Sept. 7, 1976, Ser. No. 721,057

Int. Cl.[2] B63B *1/30*

U.S. Cl. 114—283 **10 Claims**



1. A power boat comprising a V-bottom hull having a stern, a keel, a pair of topsides and a pair of bottom surfaces which rise laterally from said keel to where the bottom surfaces join the topsides; and lifting plane means adapted to improve the lifting capability of the forward wetted area of the hull and to substantially eliminate the aft wetted area during planing, said lifting plane means comprising:

a pair of lifting planes secured to said hull on opposite sides of said keel;

said lifting planes having inboard edges which are connected to the bottom surfaces of the hull at lines oriented generally alongside the keel, and having upper and lower surfaces which during planing extend at acute angles relative to the bottom surfaces, said lifting planes having a span substantially reaching to where the bottom surfaces join the topsides;

said lifting planes having trailing edges which are spaced well forwardly of said stern, so that a substantial amount of bottom surface area exists rearwardly of said trailing edges;

said lifting planes having leading edges which are swept back such that said edges generally are oriented in parallel with the forward contact lines of said V-bottom hull and water at incipient planing on calm water, and said leading edges being positioned to lead the forward boundaries of the water spray from the keel during planing, throughout their full extent, so as to prevent water attachment to the bottom surfaces of the hull both above and substantially aft of said lifting planes; and

said lifting planes having a longitudinal location relative to the hull such that the resulting lifting force of said lifting planes at planing speeds acts adjacent to the center of gravity of the boat.

4,058,078

ANCHOR ASSEMBLY

William Stelling, 175 W. 72nd St., New York, N.Y. 10023

Filed Apr. 12, 1976, Ser. No. 676,040

Int. Cl.[2] B63B *21/24*

U.S. Cl. 114—303 **3 Claims**

1. An exchangeable anchor assembly, including removable and interchangeable parts which can be easily taken apart by the user for storage and quick reassembly, said anchor assembly comprising:

a stem having a free end adapted to be connected to a line and an opposite end having a round opening;

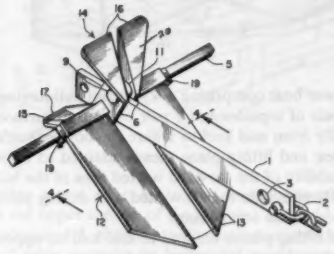
a cross bar having an unround cross-section received in said opening of said stem, said cross bar being rotatably disposed with respect to and perpendicular to said stem;

a pair of removable crown plates disposed at said opposite end of said stem on opposite sides thereof, said crown plates having an opening the dimensions of which are substantially equal to that of said cross bar and being

slidable on said cross bar from opposite ends thereof, said plates being removably connectable with said cross bar;

a set of stop-limit members removably connected between said crown plates; such that said opposite end of said stem is rotatably connected to said cross bar between said stop-limit members, said stop-limit members cooperating with said stem, permitting relative rotatable movement of said cross bar when said stop-limit members abut said stem;

a stabilizer unit, including two wing elements, integrally connected with each of said crown plates, said wing elements lying in planes angularly displaced from each other approximately 60°;



at least two removable fluke units, including a sleeve having an opening the dimensions of which are substantially equal to that of said cross bar and disposed on the ends thereof, each of said fluke units including a fluke portion connected to its said respective sleeve, said sleeve permitting said fluke units to be removed from said cross bar; and

means for removably securing said at least two fluke units onto said cross bar and holding said units against said crown plates for conjoint movement therewith, and for permitting removal of said sleeve from said cross bar whereby to remove said fluke units therewith.

4,058,079

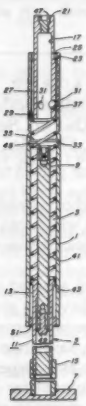
MOVEMENT INDICATOR

Michael J. Taylor, 293 Shasta Drive, Pittsburgh, Pa. 15239, and John P. Isley, 1901 Fern Hill Drive, Valparaiso, Ind. 46383

Filed June 10, 1976, Ser. No. 694,526

Int. Cl.[2] E21D *21/02;* G01V *1/28*

U.S. Cl. 116—114 H **10 Claims**



1. A device for detecting a predetermined discrete movement between first and second displaced points comprising:

a housing having a cylindrical bore therethrough and secured to one point;

an elongated slidable actuating rod having a first end bearing against the second point and a second end of said actuating rod slidably inserted into a first end of the cylindrical bore in said housing;

a cylindrical indicator sleeve inserted into a second end of the cylindrical bore in said housing and axially slidable between a retracted position within the housing and an extended position wherein a portion of said sleeve extends beyond the second end of the cylindrical bore in said housing;

means biasing the indicator sleeve to the extended position; and

locking means operated by said actuating rod securing said indicator sleeve in the retracted position until the actuating rod moves a predetermined distance inside the housing in response to a corresponding change in the distance between the first and second points to release the indicator sleeve and permit the biasing means to urge said sleeve to the extended position thus presenting a discrete, mechanical indication of said predetermined change in distance between the first and second points.

4,058,080

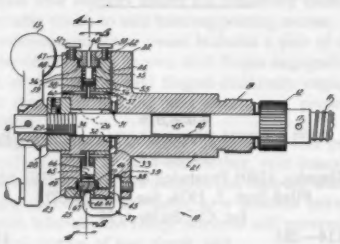
ENGLISH-METRIC DIAL ASSEMBLY

Otto Hermann, Cincinnati, Ohio, assignor to LeBlond Incorporated, Cincinnati, Ohio

Continuation-in-part of Ser. No. 583,418, June 2, 1975, abandoned. This application May 17, 1976, Ser. No. 687,313

Int. Cl.[2] B23Q *17/00;* G06C *17/00*

U.S. Cl. 116—115.5 **26 Claims**



1. A dial assembly for use in combination with a rotary-to-linear motion translating device to measure, in two different sets of units, movements of an element effected by said motion translating device, said assembly comprising,

a rotatable shaft adapted to be secured to said motion translating device,

a first scale means mounted upon said shaft and having a direct driving connection with said shaft, said first scale means having unit indicia thereon which is continuing when the first scale means moves through more than one complete revolution,

a second scale means mounted for rotation relative to said shaft, said second scale means having unit indicia thereon which is continuing when the second scale means moves through more than one complete revolution, the unit indicia of said second scale means being demarked in a different unit of measure from the unit indicia of said first scale,

gear train means mechanically interconnecting said first scale means to said second scale means, said gear train means including a pair of spur gears, said spur gears having different numbers of teeth and being drivingly connected to said first and second scale means, and

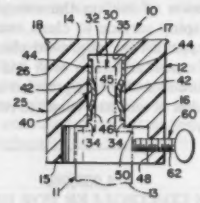
a continuous toothed belt drivingly interconnecting continuous internally toothed belt maintained in driving interconnected relation with said pair of spur gears.

4,058,081

FULL TANK MARKER

Maureen Adele Maxfield, 44-01 34th Ave., Astoria, N.Y. 11101

Filed Nov. 2, 1976, Ser. No. 738,184
Int. Cl.[2] F16K 37/00; G09F 3/08
U.S. Cl. 116—125 9 Claims



1. An indicating device for a pressurized tank containing a valve having a head for opening and closing said valve, said device comprising:

a. a body portion having a top end and spaced apart bottom end with a peripheral surface therebetween,

b. indicia means on said top end of said body portion to selectively indicate the amount of fluid in said tank,

c. gripping means on said peripheral surface to facilitate mounting and removal of said body portion from the valve head,

d. enclosing means extending vertically in said body portion upwardly from said bottom end, said enclosing means including a cavity having a pair of vertically extending spaced apart cavity walls adapted to receive therebetween the valve head, such that vertical mounting and removal of said body portion on the valve head by said gripping means is obtainable,

e. retaining means connected to at least one of said cavity walls and extending within said cavity and adapted for releasably securing by frictional engagement said body portion to the valve head thereby requiring a force applied to said gripping means for mounting and removal of the device from a valve head, and

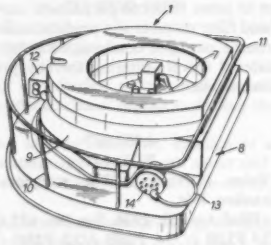
f. said retaining means comprises a first leaf spring secured at one end to said cavity wall and bulged for engagement with the valve head, and a second leaf spring secured at one end to said opposite cavity wall and bulged for engagement with the valve head.

4,058,082

SUBMERSIBLE PAINTING APPARATUS

Russell Edward Winn, Kilbrittain, Ireland, assignor to A/S Jotungruppen, Sandefjord, Norway

Filed June 25, 1976, Ser. No. 699,687
Int. Cl.[2] B05C 1/00
U.S. Cl. 118—9 3 Claims



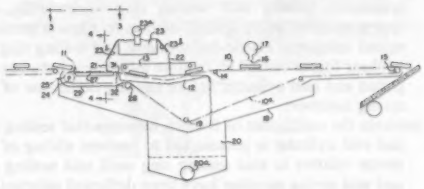
1. A remotely-controllable submersible apparatus for applying paint underwater to a submerged surface, the apparatus comprising a vehicle having a housing defining a chamber having an open side, a pressure-reducing device capable of continuously maintaining a reduced pressure inside the chamber relative to the pressure outside the chamber so as to cause the vehicle to adhere to the submerged surface with the open side of the chamber facing the submerged surface, a steerable driven wheel and at least one supporting wheel mounted so that the vehicle can be driven along the submerged surface with the open side of the chamber adjacent to the submerged surface, a remotely-operable steering device for steering the steerable wheel, a motor for driving at least the steerable wheel, and located at the rear of said vehicle an assembly for applying paint underwater to the submerged surface, the assembly comprising in combination a plurality of non-intermeshing vertically disposed rotary paint brushes each having an axial bore communicating with a feed pipe from a paint manifold, a separate hydraulic motor for independently driving each respective rotary pant brush, resilient suspension means for each hydraulic motor and its associated brush including an upper leaf spring means and a lower leaf spring means, a spring tensioning means connected to one end to said upper leaf spring means and at its other end to a manually adjustable eccentric cam shaft, and remotely-operable hydraulic means for moving the rotary paint brushes either into contact with or away from the submerged surface.

4,058,083

REAR BATTER FLOW FOR BATTER APPLICATOR MACHINES

Michael E. Miller, Bellevue, Ohio, assignor to Sam Stein Associates, Inc., Sandusky, Ohio

Filed Feb. 20, 1976, Ser. No. 659,776
Int. Cl.[2] B05C 3/10, 5/00
U.S. Cl. 118—16 10 Claims



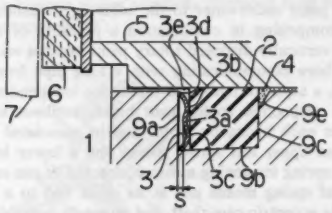
1. A food batter applicator for batters of intermediate viscosities between about 80 and about 360 centipoises, comprising a frame, an endless open mesh wire conveyor belt having support pulleys on said frame and having a food advancing run from a food-introduction end to a food-discharge end and a return run, a batter reservoir through which said return run passes, a rotatable shaft on said frame having sprocket teeth engaging said belt at said food-introduction end, means on said frame guiding said return run of said belt in a generally horizontal direction for a predetermined distance upstream of said drive shaft, a batter holding pan on said frame closely below said generally horizontal portion of said belt sufficient to hold said batter on said holding pan in driven relation to said belt, said pan having a smoothly bent arcuate portion extending partly around said drive shaft with close clearance of about one-eighth inch about said sprocket teeth from a zone immediately below said drive shaft to a zone about 55° to 60° above a horizontal center line of said shaft, said drive shaft having filler spools between said sprocket teeth filling the diameter of said shaft nearly to the root diameter of said sprocket teeth, a batter retaining plate on said frame generally horizontal extending from a zone tangential to said root diameter at the top of said drive shaft downstream for a predetermined distance, whereby said food-advancing run of said belt travels in contact with said batter retaining plate for said last-named predetermined distance, and means for supplying batter substantially continuously to said batter holding pan.

4,058,084

SEALING AND ADJUSTING MEANS IN A DISK BRAKE

Hiroshi Kawaguchi, and Kohji Nishikawa, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Aug. 18, 1976, Ser. No. 715,542
Claims priority, application Japan, Apr. 10, 1976, 51-44519[U]
Int. Cl.² F16D 65/52
U.S. Cl. 188—71.8 24 Claims



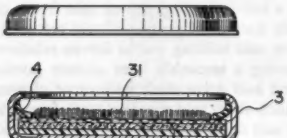
1. Sealing means in a disk brake, in which a piston fitted in a cylinder is to urge a friction pad onto a disk rotating with a wheel of a vehicle in order to stop or to decelerate the vehicle, for maintaining the fluid tightness between said piston and said cylinder, said sealing means comprising:
   a groove substantially rectangular in section disposed circumferentially on the internal periphery of said cylinder, said groove having a forward wall;
   a sealing ring substantially rectangular in section fitted in said groove and having a forward surface; and
   a spring member disposed between the forward surface of said sealing ring and the forward wall of said groove for constantly biasing said sealing ring backwardly, said spring member being shaped such as to allow a predetermined amount of elastic deflection of said sealing ring due to shear forces caused by relative movement between said piston and said cylinder before causing deflection of said spring member;
   wherein the coefficient of friction between said sealing ring and said cylinder is preselected to prevent sliding of said piston relative to said sealing ring until said sealing ring and said spring member have been deflected substantially up to the limit of elastic deflection thereof.

4,058,085

STAMP PAD

Teh-Tsao Yang, 696, Section 4, Pa-Teh Road, Taipei, China /Taiwan

Filed Nov. 19, 1975, Ser. No. 633,430
Int. Cl.² B05C 11/00
U.S. Cl. 118—264 3 Claims



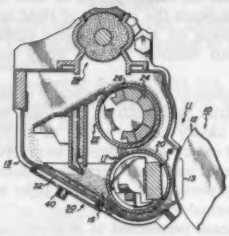
1. A stamp pad comprising:
   a. a pad vessel having a ring-shaped upturned edge;
   b. a bolster contained in said pad vessel for soaking and holding ink for stamp use;
   c. a substrate with flock perpendicularly planted thereon to form the pad surface placed on top of said bolster in said vessel, said flock drawing ink from said bolster upward through said substrate by capillary action and retaining said ink, said ink being filtered by said substrate, said flock being evenly wetted thereby, said surfae being formed so that when a stamp or seal presses upon said pad surface said flock brushes ink evenly on the stamp character surface and breaks the ink surface tension avoiding superficious adhesion of ink on the stamp surface, said flock forming a spiny surface to clean out the dust and waste jammed in and on the engraved characters allowing the printing of a neat and clear seal; and
   d. a ringlet forced under compression into said ring-shaped upturned edge of said pad vessel to retain said substrate on said bolster.

4,058,086

EMISSION CONTROLLER FOR DEVELOPMENT APPARATUS

Don B. Jugle, Penfield, and Anthony F. Lipani, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 11, 1976, Ser. No. 685,216
Int. Cl.² G03G 15/08
U.S. Cl. 118—653 2 Claims



1. In an electrostatographic reproduction system in which a latent electrostatic image is developed by a multi-component developer material including toner particles and relatively larger carrier particles an improved emission control apparatus for suppressing airborne toner particles comprising
   a developer housing having a sump containing multi-component developer material, said multi-component developer material including toner particles and relatively larger carrier particles,
   means for applying said developer material to develop latent electrostatic images and cause at least a portion of said toner particles to become airborne,
   filter means positioned in said housing flush with the sump thereof in the flow path of said developer material to effect continuous cleaning thereof, said filter means including a filter member having a pore size ranging from about 20 microns to about 100 microns,
   said filter means being connected to a source of negative pressure to cause airborne particles to move in the direction of said filter member at a predetermined rate whereby said airborne particles combine with the flowing developer material for pre-filtering thereby prior to reaching said filter member.

4,058,087

BOILER

Gustav A. Rehm, Milwaukee, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

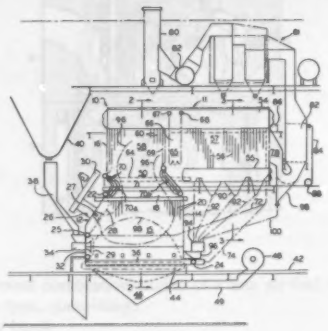
Filed Apr. 23, 1976, Ser. No. 679,660
Int. Cl.² F22B 21/14; F23B 1/22; F23C 1/02, 1/04
U.S. Cl. 122—235 R 5 Claims

1. A boiler including first means defining a primary combustion zone,
   second means defining a combustion gas receiving zone disposed above said primary combustion zone,

passage defining means disposed between said first and second means for connecting said primary combustion zone and said combustion gas receiving zone,

coal burning means disposed at the lower end of said primary combustion zone and including means for injecting coal into said primary combustion zone, spreader means for distributing said coal across the lower end of said zone, and air delivery means for delivering combustion air upwardly into said primary combustion zone and through said spreader means,

combustion means disposed adjacent the upper end of said primary combustion zone for delivering combustion air and a fluid fuel to said primary combustion zone, said combustion means being located below the passage defining means and is constructed and arranged for projecting fluid fuel and combustion air downwardly and inwardly



into said primary combustion zone and in a direction which intersects said spreader means for producing a flame which extends into said zone and backwardly up through passage defining means into said combustion gas receiving zone whereby heat will be generated in said primary zone when either or both of said coal burning means or combustion means are operated,

first water tube means disposed in said combustion gas receiving zone,

second water tube means disposed in said primary combustion zone and disposed to be heated directly by said coal burning means or said combustion means,

and third water tube means distinct from and interconnecting said first and second water tube means so that circulation therebetween will occur when said combustion means or said coal burning means are operated.

4,058,088

OSCILLATING PISTON ENGINE

Jesse C. Brown, 307 Walter Ave., Delanco, N.J. 08075

Continuation-in-part of Ser. No. 564,782, April 3, 1975, Pat. No. 3,974,801. This application Aug. 11, 1976, Ser. No. 713,531

Int. Cl.[2] F02B *53/00*

U.S. Cl. 123—18 R **4 Claims**

1. An engine, comprising:

a block,

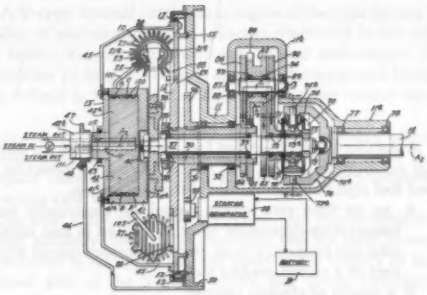
at least one pair of cylinders mounted tangentially on diametrically opposite sides of an axis extending through the block,

means mounting said cylinders for rotation in a bank in unison in a substantially annular path about said axis with one end of each cylinder leading and the other end trailing,

a double-acting piston displaceable axially in each cylinder between opposite ends thereof,

means mounting said pistons for axial movement in said cylinders and for rotation in unison about said axis relative to said cylinder mounting means,

control means operable in response to rotation of said cylinders to supply pressure fluid to and to exhaust pressure fluid from opposite ends of each cylinder in alternating timed relation for causing said pistons and cylinders to move in alternate directions relative to one another as they rotate about the axis, said control means including a rotary valve having a rotor and a stator, means mounting said rotor for rotation with said cylinder mounting means, conduit means connecting said rotor to opposite ends of each cylinder, and passage means in said stator for supplying pressure fluid to said conduit means and exhausting pressure fluid therefrom during rotation of said rotor relative to said stator, said passage means including groove means and port means in said stator and rotor adapted to register with one another upon rotation of said rotor to connect one end of each cylinder to said pressure fluid source and the opposite end of each cylinder to exhaust and to reverse said connection when each piston reaches the end of its stroke in its cylinder so that the opposite end of each cylinder is connected to said pressure fluid source and said one end is connected to exhaust until the piston reaches the end of its return stroke in its cylinder, said groove means including a series of arcuate grooves each divided into segments having arcuate extents corresponding to the arcuate extent of motion of the



piston relative to the cylinder during each portion of the stroke of the piston in its cylinder,

an output shaft journalled in said engine block, and

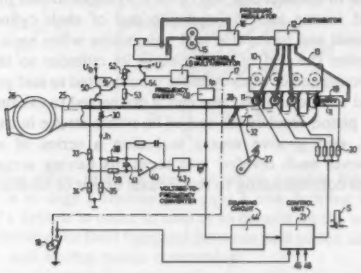
gearing means in said engine block connecting said cylinder mounting means and said piston mounting means together and to said output shaft for affording controlled relative motion between the pistons and the cylinders and for converting said relative motion into unidirectional rotation of said output shaft, said gearing means including a differential gear assembly having a pair of input ring gears rotatable relative to one another, a pair of output planetary gears engaging said ring gears, and a yoke connected to said output shaft and rotatably mounting said planetary gears, a first gear train connecting one of said input ring gears to said cylinder mounting means, a second gear train connecting the other of said input ring gears to said piston mounting means, one of said gear trains including a complementary pair of sector gears interengaged with one another, one of said pair of sector gears being rotatable in synchronism with said cylinder mounting means and the other of said pair of sector gears being rotatable in synchronism with said piston mounting means, whereby the sector gears cooperate with the gear trains to impart unidirectional output torque to said output shaft.

4,058,089

ELECTRICALLY CONTROLLED FUEL INJECTION SYSTEM

Peter Schmidt, and Helmut Worz, both of Schwieberdingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 18, 1975, Ser. No. 614,769
Claims priority, application Germany, Oct. 10, 1974, 2448304
Int. Cl.[2] F02B 3/00
U.S. Cl. 123—32 ED 9 Claims



1. An electrically operated fuel injection system for an internal combustion engine, said engine having an induction tube and fuel injection valves, said system including:

A. an air flow rate sensor, having an electrically heated, temperature-dependent resistor, located in said induction tube and connected in an electrical bridge circuit which is part of a closed control loop;

B. a source of electric current;

C. means for apportioning said electric current to said resistor in two components, the first component being a DC component whose magnitude is finite when the air flow is zero, and the second component being a variable current whose magnitude vanishes together with the air flow and whose magnitude can increase with increasing air flow to thereby generate additional heat in said resistor to compensate for heat loss to the air flow;

D. an operational amplifier, whose inputs are connected to separate junction points in said bridge circuit and which provides an output voltage related to the difference of potential between said separate junction points;

E. voltage-to-frequency converter means, connected to receive said output voltage and providing a control signal whose frequency is proportional to the air flow rate;

F. electronic current control means for receiving said control signal and for providing said second heating current component for said resistor;

G. a squaring circuit, connected to receive said control signal and for spacing its frequency;

H. a digitally operating electronic fuel control unit, connected to receive said squared control signal and to provide a fuel control datum for determining the opening time of the fuel injection valves of the engine; and

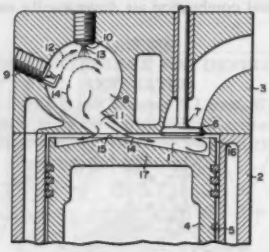
I. frequency dividing means, connected to receive said control signal and to thereby provide an output signal of a second, reduced frequency which is applied to said current control means.

4,058,090

INTERNAL COMBUSTON ENGINE WITH AUXILIARY COMBUSTION CHAMBER

Takao Suzuki, and Hiroshi Ogita, both of Shizuoka, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 19, 1975, Ser. No. 559,794
Claims priority, application Japan, Aug. 8, 1974, 49-94787[U]
Int. Cl.[2] F02B 23/00
U.S. Cl. 123—32 SP 7 Claims



1. An internal combustion engine comprising:

a cylinder;

a cylinder head secured to said cylinder;

a piston reciprocably disposed in said cylinder and having a crown at one end thereof which faces said cylinder head, said crown being substantially conical with the conical substantially straight side thereof sloping from the apex thereof in a direction away from said cylinder head, said piston further comprising a straight annular bank on the peripheral edge of said crown, said bank extending from the peripheral edge of the crown toward said cylinder head in a direction parallel to the axis of said piston;

a main combustion chamber defined by said cylinder, said cylinder head, and the crown of said piston;

means defining an auxiliary combustion chamber or circular cross-section in said cylinder head;

a spark plug in said auxiliary combustion chamber;

means for supplying fuel to said auxiliary combustion chamber;

means defining a communication passage in said cylinder head fluidly communicating said main combustion chamber and said auxiliary combustion chamber, said communication passage being disposed tangentially to the periphery of the auxiliary combustion chamber, the axis of said communication passage being inclined at an angle to the axis of said cylinder, one end of said passage terminating in a first opening which opens into said main combustion chamber and the other end thereof terminating in a second opening which opens into said auxiliary combustion chamber;

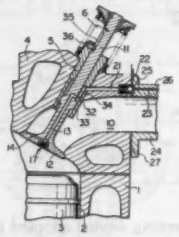
the apex of the piston crown lies on a straight line which is parallel to the axis of the piston and intersects the axis of the passage at said first opening so that the apex is adjacent the first opening when the piston is in its top dead center position whereby burning gas in the auxiliary combustion chamber jets therefrom into the main combustion chamber and is guided along the crown of the piston so as to spread throughout the main combustion chamber.

4,058,091

INTERNAL COMBUSTION ENGINE OF A LEAN AIR-FUEL MIXTURE COMBUSTION TYPE

Toshio Tanahashi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed June 3, 1976, Ser. No. 692,504
Claims priority, application Japan, Jan. 21, 1976, 51-5042
Int. Cl.[2] F02B *19/10*; F02M *39/00*
U.S. Cl. 123—32 VN 7 Claims



1. An internal combustion engine of a lean air-fuel mixture combustion type, comprising:

a cylinder block,

a piston reciprocally movable in the cylinder block,

a cylinder head fixed onto the cylinder block,

a combustion chamber formed between the inner surface of the cylinder head and the top surface of the piston,

a valve guide fixed to the cylinder head,

an intake valve supported by the valve guide and comprising a valve stem and a valve head having on its outer wall an injection nozzle,

an intake passage one end of which is connected to the combustion chamber via the intake valve, the other end of the intake passage being connected to the atmosphere,

a fuel supply means for feeding a lean air-fuel mixture into the intake passage,

a spark plug having a spark gap located in the combustion chamber,

a pumping chamber formed between the valve stem and the valve guide, the pumping operation of said pumping chamber being caused by the reciprocal movement of the intake valve,

a fuel injection passage formed in the intake valve and arranged so as to connect the pumping chamber with the injection nozzle,

a first check valve disposed in said fuel injection passage and only allowing outflow of a liquid fuel from the pumping chamber to the injection nozzle,

a fuel supply passage arranged so as to connect the pumping chamber with a fuel source,

a second check valve disposed in the fuel supply passage and only allowing inflow of the liquid fuel from the fuel source to the pumping chamber, said injection nozzle being arranged so as to be directed to an ignition area around the spark gap,

a fuel being injected from the injection nozzle into the combustion so as to form a rich air-fuel mixture layer in the ignition area when the intake valve returns to its closing position at the time of the intake stroke of the engine,

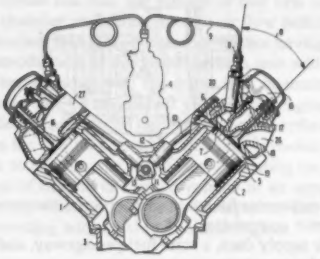
said pumping chamber comprising a groove formed on the valve guide and a projection formed on the valve stem, said projection being fitted into said groove.

4,058,092

V-TYPE ENGINES

Noboru Hikosaka, Kamakura; Mitsuo Watanabe, Yokohama, and Shoji Shiozaki, Fujisawa, all of Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Nov. 26, 1975, Ser. No. 635,518
Claims priority, application Japan, Nov. 27, 1974, 49-136460
Int. Cl.[2] F02B *3/00, 75/22*
U.S. Cl. 123—32 ST 4 Claims



1. A V-type internal combustion engine of the type having a plurality of pistons and piston cylinders positioned in left and right banks, respectively, which are inclined with respect to one another to form a V-shape, the space between said banks being defined as within said V-shape, said engine further having

a cross flow cylinder head with intake ports opening within said V-shape, exhaust ports in said banks opening to the space outside said V-shape, an injection pump disposed within said V-shape,

a cam shaft at the apex of said V-shape, said engine comprising; auxiliary combustion chambers, one for each piston, disposed in said right and left banks in the vicinity of the inner side of the V-shape above said piston cylinders, respectively, and a plurality of throats for providing communication between said respective cylinders and auxiliary combustion chambers, each said auxiliary chamber being positioned along a first transverse line passing thru the center of the respective cylinder, which transverse line is perpendicular to a second transverse line passing through the centers of all cylinders in a given bank, said first and second transverse line defining a plane substantially parallel with the top and bottom surface of said cylinders in a given bank; injection nozzles for each auxiliary combustion chamber respectively, each having its axis disposed in a plane defined by said first transverse line and the axis of a respective cylinder, and inclined at an angle between 0° and 60° with respect to said cylinder axis and having one end projecting into said respective auxiliary combustion chamber and the other end being within said V-shape;

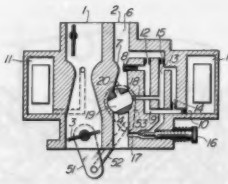
and further comprising for each cylinder, an intake valve and an exhaust valve, a pair of rocker arms disposed symmetrically about said first traverse line and said auxiliary combustion chamber and above said cylinder and valves, one end of said pair of rockers operatively connected to said intake and exhaust valves, respectively, a pair of push rods operatively engaged at one end thereof to the other ends of said rocker arms, respectively, a pair of cams on said cam shaft for operatively engaging the other ends of said push rods, respectively, the said cams for all said cylinders being arranged on said shaft so that adjacent cams engage push rods existing in opposite banks.

4,058,093

CARBURETOR FOR USE IN INTERNAL COMBUSTION ENGINE

Takashige Kohno, Hitachi; Takeshi Takamaru, Mito; Akiyasu Kuwahara, Hitachi, and Michitsugu Mori, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed June 19, 1975, Ser. No. 588,365
Claims priority, application Japan, June 21, 1974, 49-70190
Int. Cl.[2] F02B 19/10, 19/16, 19/18
U.S. Cl. 123—75 B 4 Claims



1. A carburetor for use in an internal combustion engine, said carburetor comprising

an air supply duct, a main fuel passageway, and a low speed fuel passageway;

a rotary throttle valve mounted in said air supply duct, said rotary throttle valve having a body portion with a gasified fuel-air passageway extending radially through the body portion for passing gasified fuel-air mixtures, and said rotary throttle valve controlling the amount of flow of the gasified fuel-air mixtures supplied to the engine by rotation of said rotary throttle valve; and

a bypass passageway extending from the low speed fuel passageway to an opening port adjacent said rotary throttle valve, said opening port being disposed to communicate with said gasified fuel-air passageway of said rotary throttle valve when said rotary throttle valve is at idling opening position, and said opening port being continuously closed by said body portion upon said rotary throttle valve being rotated from its idling opening position to a predetermined operational opening of said rotary throttle valve so that said opening port is closed at said predetermined operational opening.

3. In a torch nozzle type internal combustion engine having a main combustion chamber and an auxiliary conbustion chamber associated with each cylinder of said engine, a carburetor for supplying a lean fuel-air mixture to said main combustion chamber by means of at least one main air supply duct and a rich fuel-air mixture to said auxiliary combustion chamber by means of an auxiliary air supply duct, said carburetor including a main fuel supply duct and a low speed fuel supply duct, wherein the improvement comprises means associated with said auxiliary air supply duct for providing a variable air bleeder to continuously control the amount and composition of said rich fuel-air mixture during changes from idling to normal operation of said engine, wherein said variable air-bleeder means comprises in combination

valve means mounted for rotation in said auxiliary air supply duct for controlling the amount and composition of the fuel-air mixture, said valve means including a body portion mounted for rotation in said auxiliary air supply duct and at least one passageway extending radially through said body portion for passing the fuel-air mixture; and

bypass passageway means for communicating the low speed fuel supply duct with said auxiliary air supply duct adjacent said valve means, said bypass means having an opening port disposed to be in communication with said one passageway in said valve means at the engine idling position of said valve means, and

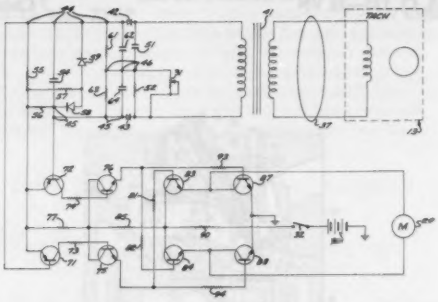
wherein said opening port is continuously decreased in opening area upon rotation of said valve means from said idling position to a predetermined open position of said valve means.

4,058,094

SPEED CONTROL DEVICE

Franklin Eldridge Moore, 327 W. 6th St., Long Beach, Calif. 90802

Filed June 30, 1975, Ser. No. 591,779
Int. Cl.[2] F02D 11/10
U.S. Cl. 123—102 3 Claims



1. A speed governing device adopted to control the rate of a rotating power plant comprising:

control means connected to said power plant for controlling the rotational rate thereof;

a rate sensor connected to the output of said power plant for providing a cyclic feedback signal proportional to the rotational rate of said power plant;

a resonant circuit connected to receive said cyclic feedback signal for producing an output signal of a first polarity when said cyclic signal is above a predetermined frequency and of a second polarity when said cyclic signal below said predetermined frequency;

first amplifying means connected to receive said output signal from said resonant circuit including first biasing means, said first amplifying means in combination with said biasing being rendered responsive to said first polarity of said output signal for producing a first control signal indicative thereof;

second amplifying means connected to receive said output signal from said resonant circuit including second biasing means, said second amplifying and biasing means being operative in combination to be rendered responsive to said second polarity of said output signal for producing a second control signal indicative thereof; and

a servo motor connected to receive said first and second control signals for producing control inputs to said control means according to the presence of said first or second control signal, said first and second amplifying means each include a PNP first transistor forming a first preamplifier stage and an NPN transistor forming a second preamplifier stage in circuit with said first preamplifier stage.

4,058,095

DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE

Nobuo Habu, Shizuoka, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

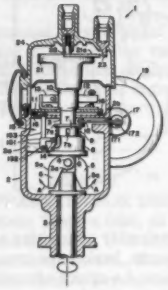
Filed June 11, 1976, Ser. No. 694,931
Claims priority, application Japan, Dec. 5, 1975, 50-164916[U]
Int. Cl.[2] F02P 5/04
U.S. Cl. 123—117 R 10 Claims

1. A distributor for an internal combustion engine having a first rotary shaft, comprising:

a. a fixed cylindrical housing;

b. a second rotary shaft extending into said housing for rotation in synchronism with the first rotary shaft;

c. a breaker plate rotatably supported within said housing and rotatable relative to said second rotary shaft;
d. a swinging arm mounted on said breaker plate and carrying a movable contact;
e. a stationary contact fixedly mounted on said breaker plate and cooperating with said movable contact;
f. a first contact breaker cam fixedly mounted on said second rotary shaft, said movable contact continuously engaging said first cam;
g. a sleeve loosely mounted on said second rotary shaft;
h. a second ignition timing changing cam loosely fitted on said sleeve, said second cam being rotatable around the axis of said second rotary shaft together with said sleeve and movable in the axial direction of said second rotary



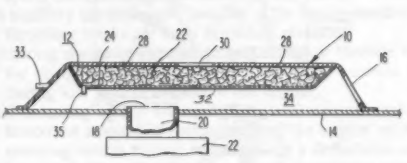
shaft relative to said sleeve, said second cam having an outer peripheral cam surface in the form of a curved surface of a predetermined order;
i. a follower engaging said cam surface;
j. first link means responsive to the movement of said follower for causing corresponding rotation of said breaker plate around the axis of said second rotary shaft;
k. speed sensing means mounted on said second rotary shaft for urging said second cam in the axial direction of said second rotary shaft upon an increase in the rotating speed of said second rotary shaft; and
1. second link means connected to said sleeve for causing rotation of said second cam around the axis of said second rotary shaft through said sleeve in response to the magnitude of the load on the engine.

4,058,096

APPARATUS AND METHOD FOR INCREASING THE HORSEPOWER OF AN INTERNAL COMBUSTION ENGINE

Stephen Edward Brown, 501 South Matlack St., West Chester, Pa. 19380

Filed Feb. 18, 1975, Ser. No. 550,770
Int. Cl.[2] F02M *31/00*; F25D *3/12*
U.S. Cl. 123—119 CG **5 Claims**



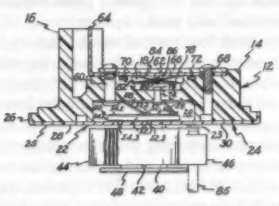
1. An apparatus for use with an internal combustion engine which utilizes a carburetor and which burns a mixture of (a) a fuel which is liquid at ambient temperature and pressure and (b) air; said apparatus comprising in combination an air scoop means having wall means forming a first enclosed chamber; said air scoop means having an air inlet aperture and an air outlet aperture; said air inlet aperture being in communication with an ambient air source and the interior of said first chamber; said air outlet aperture being in communication with the interior of said first chamber and being adapted to communicate with an air inlet means of said carburetor; whereby when air is introduced through said air inlet aperture, the air flows through said first chamber to said air outlet aperture to provide an air flow path through said first chamber; said apparatus further including a second chamber of a generally pan-shaped configuration secured in a sealing engagement to the upper interior surface of said air scoop means and being made of a highly temperature conductive material said second chamber being of a volume less than the volume of said first chamber; said second chamber protruding into the air flow path through said first chamber; said second chamber further having access means for introduction of a coolant medium into said second chamber; whereby when said apparatus is in communication with the carburetor of an internal combustion engine and a coolant medium is introduced into said second chamber the air flowing from the first inlet to the second inlet is cooled by said coolant prior to entering the carburetor, increasing the quantitative amount of oxygen in a given volume of air supplied to said carburetor; whereby increased horsepower can be obtained by providing additional fuel to said engine.

4,058,097

CHOKE CONTROL

Allen H. Silverstein, Attleboro, and James J. Armstrong, III, Seekonk, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 30, 1975, Ser. No. 591,548
Int. Cl.[2] F02D *11/08*
U.S. Cl. 123—119 F **14 Claims**



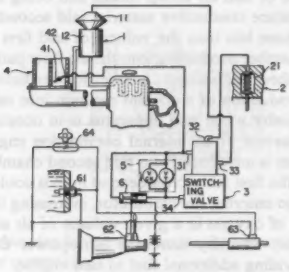
1. Control means having an ambient temperature compensating feature for adjusting a choke in an automotive motor system as motor temperature increases after initiation of motor operation comprising heat response means movable in response to increase in temperature of said heat responsive means for adjusting the choke, heat sink means surrounding heat responsive means on three sides for providing uniform, quick heat transfer to said heat responsive means, said heat sink means comprising a bushing to which said heat response means is secured, a plate having heater portion and a mounting portion mounting said bushing and having one surface extending along one lateral edge of said coil and another surface on which said electrical heater means is mounted, and a flange member mounted on said bushing and having one surface extending along another lateral edge of said coil, self-regulating electrical resistance heater means mounted on said heat sink means and energizable from an electrical power source upon initiation of said motor operation for heating said heat responsive means, additional self-regulating electrical resistance heater means mounted on said heat sink means for supplementing heating of said heat responsive means when said additional heater means is energized, and thermostatic switch means connectable to an electrical power source upon initiation of said motor operation and actuable above a selected ambient temperature for energizing said additional heater means.

4,058,098

CONTROL SYSTEM FOR USE IN EXHAUST GAS RECIRCULATION SYSTEM

Hidemi Onaka, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 11, 1976, Ser. No. 665,803
Claims priority, application Japan, June 23, 1975, 50-74453
Int. Cl.[2] F02B *29/00*
U.S. Cl. 123—119 A **6 Claims**



1. In a fuel system for use in an exhaust gas recirculation system of an internal combustion engine, wherein part of the exhaust gases from the exhaust system is recirculated to the engine intake system to reduce the amount of harmful components contained in the exhaust gases, as well as to prevent lowering in the running performance of the engine by controlling the recirculation of exhaust gases, the improvements comprising:

a vacuum operated recirculation control valve means connected between the engine intake and exhaust systems to control recirculation of exhaust gases between said exhaust system and said intake system;

a vacuum operated fuel control mechanism to increase the open, cross-sectional area of a fuel metering member in the engine carburetor, to compensate for the running performance of the engine, which has been lowered due to exhaust gas recirculation;

a negative-pressure switching valve to selectively communicate negative pressure to said recirculation control valve means as well as to fuel control mechanism, said negative-pressure switching valve including a valve body having at least one inlet and two outlets defining two communication paths therebetween, a valve stem, a diaphragm and a diaphragm chamber positioned so that a negative pressure supplied to a compartment of said diaphragm chamber effects switching of communication from one path to the other;

means connecting said fuel control mechanism with one outlet of said negative-pressure switching valve;

means connecting said recirculation control valve with the other said outlet;

means connecting the diaphragm compartment of said negative-pressure switching valve to at least one of a delay element or a delay by-pass valve;

means to actuate said delay by-pass valve comprising means to sense at least one of the following: an acceleration-transient condition; a change gear position; cooling water temperature; vehicle speed; or exhaust gas temperature;

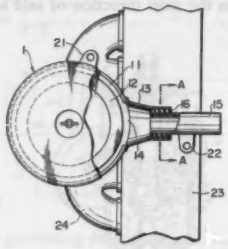
means connecting said delay element and said delay by-pass to the engine carburetor air intake so that the operation of the switching valve is controlled commensurate to the running condition of the engine, the engine vacuum being commensurate with the opening of the throttle valve in the engine carburetor; whereby when said negative-pressure switching valve is actuated, a recirculating path for exhaust gases is closed, and concurrently an additional fuel passage for said fuel control mechanism is closed, thereby controlling both the recirculation of exhaust gases and the concentration of the mixture charge.

4,058,099

AIR CLEANER ASSEMBLY

Taiji Saito, Toyoto, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jan. 26, 1976, Ser. No. 652,169
Claims priority, application Japan, Nov. 12, 1975, 50-135225
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 D **6 Claims**



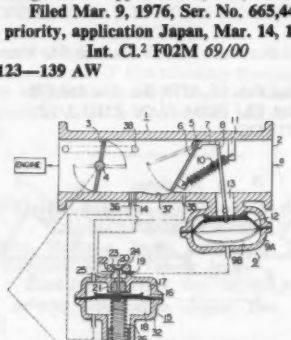
1. An air cleaner assembly comprising a casing having an air cleaning element therein, intake pipe means connected to both a source of warm air and a source of cool air, switching valve means carried by said intake pipe means for selectively directing either warm air or cool air through said intake pipe means from said sources of said air, a joint tube secured at one end thereof to said casing and having its other end connected with said intake pipe in telescoping relationship therewith, said joint tube providing communication between said intake pipe means and the interior of said casing for introducing air from said intake pipe into said casing, and a resilient sleeve member carried at said other end of said joint tube positoned interiorly within one of said telescoping members and surrounding the other said telescoping member extending axially along the area of telescoping overlap and being sandwiched in airtight engagement between said joint tube and said intake pipe.

4,058,100

INTAKE AIR FLOW RATE MEASURING DEVICE FOR INTERNAL COMBUSTION ENGINE

Eizi Tanaka, Anjo, and Hiroshi Mochizuki, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 9, 1976, Ser. No. 665,443
Claims priority, application Japan, Mar. 14, 1975, 50-31359
Int. Cl.[2] F02M *69/00*
U.S. Cl. 123—139 AW **15 Claims**



10. A flow rate measuring device for intake air into internal

combustion engines of the type provided with an air intake pipe (1) and a throttle valve (3) disposed within said air intake pipe (1) for controlling the flow rate of intake air flowing into the engine, said device comprising:

a. an unbalanced sensing vane (6) disposed within said intake pipe (1) at the upstream of said throttle valve (3), said sensing vane being opened or closed in response to the flow rate of intake air flowing into said air intake pipe (1),

b. a shaft (5) operatively coupled to and rotated by said sensing vane, the angular displacement of said shaft representing the flow rate of intake air,

c. means (15) for detecting the pressure difference across said sensing vane (6) and producing a signal representative of both the difference between the detected pressure difference across said sensing vane and a pressure in said intake pipe between said sensing vane and said throttle valve, and

d. means (9) responsive to said signal for controlling the degree of opening of said sensing vane (6) such that the pressure difference across said sensing vane is controlled at a constant value, whereby the degree of opening of said sensing vane is precisely in proportion to the flow rate of intake air.

4,058,101

CONTROL APPARATUS FOR DIESEL ENGINE

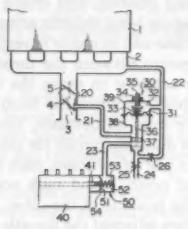
Kaoru Taira; Teruo Sato; Yoshiya Ishii, all of Toyota; Yukinori Miyata, and Katashi Okamoto, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed July 2, 1976, Ser. No. 702,131

Claims priority, application Japan, July 8, 1975, 50-84236

Int. Cl.[2] F02D *1/04, 1/06;* **F02M** *3/00*

U.S. Cl. 123—140 MP **7 Claims**



1. A control apparatus for a Diesel engine comprising:

a fuel injection pump for injecting fuel to an engine, said fuel injection pump having a control rack for controlling the amount of the fuel injected to the engine;

a main throttle valve installed in an intake manifold of the engine for controlling the speed of intake air flow;

venturi means disposed in the intake manifold of the engine for permitting intake air to flow therethrough with the speed controlled by said main throttle valve;

an auxiliary throttle valve installed in the intake manifold for throttling intake air in its throttling position;

actuating means connected to said auxiliary throttle valve for bringing the same into said throttling position only during low load operation of the engine;

fuel metering means for controlling said control rack and hence the amount of fuel injected to the engine, said fuel metering means having a housing and a deflectable member coupled together for forming therebetween a pressure chamber to be supplied with the negative pressure, said deflectable member being connected to said control rack to control said control rack in response to the negative pressure in said pressure chamber; and

selector valve means operatively connected to said auxiliary throttle valve for transmitting the negative pressure in said venturi means to said pressure chamber of said fuel metering means when said auxiliary throttle valve is opened and for transmitting the negative pressure in said intake manifold downstream of said auxiliary throttle valve to said pressure chamber of said fuel metering means when said auxiliary throttle valve is in its throttling position.

4,058,102

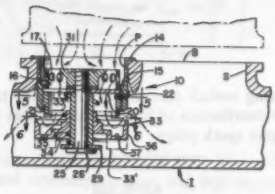
FUEL ECONOMIZER FOR CABURETED INTERNAL COMBUSTION ENGINES

Robert E. Fabritz, 3200 Shepherd St., Mount Ranier, Md. 20822

Filed May 5, 1976, Ser. No. 683,630

Int. Cl.[2] F02M *29/00*

U.S. Cl. 123—141 **12 Claims**



1. A fuel economizer for internal combustion engines having an intake manifold and a carburetor thereon, comprises: a tubular body having an open inlet end and an open outlet end and means on the body for supporting the body in an intake manifold in aligned registry with a carburetor, whereby air and fuel leaving the carburetor will pass through the economizer; means on the body defining trough-like liquid fuel collecting means to collect liquid fuel leaving the carburetor; said liquid fuel collecting means having air passage means associated therewith for directing flow of air over collected fuel therein in contacting relationship therewith to atomize the liquid fuel; air/fuel deflector means movably carried by the body at the outlet end thereof in the path of air and fuel flowing through the outlet end of the body to promote turbulence in the air and fuel; and means yieldably biasing said deflector means toward closing relationship relative to the body, whereby the deflector means is moved toward open position in response to vacuum and increased flow in an intake manifold and is moved toward closed position by said biasing means under conditions of decreased vacuum and flow, said deflector means thus opening and closing in response to engine demand, and the economizer thus effecting thorough atomization of fuel and more efficient fuel combustion and consequently increasing the fuel economy of an engine.

4,058,103

ELECTRONIC IGNITION UNIT

Dale C. Brocker, 19525 Forest Ave., Castro Valley, Calif. 94546

Filed Nov. 3, 1975, Ser. No. 627,934

Int. Cl.[2] F02P *1/00*

U.S. Cl. 123—148 E **4 Claims**

1. An electronic ignition unit for an internal combustion engine having a drive shaft, spark plugs, an associated ignition coil and source of low voltage current which comprises

a transector having adjacent but non-contacting rotor and stator, each with electrically-interacting cyclical-pattern conductors thereon,

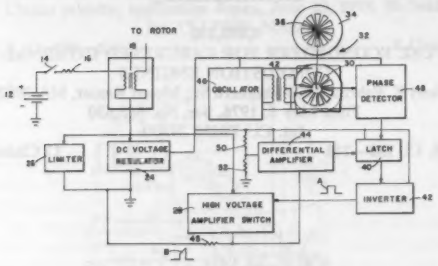
means for electronically connecting said transector stator conductor with the low voltage source,

means for mechanically connecting said transector rotor with the engine drive shaft so as to produce a sequence of output pulses,

a high voltage switch connected to receive the output pulses generated by said transector in response to rotation of said

transector rotor, and adapted to generate a timed sequence of pulses for delivery to the ignition coil,

means including an electronic latch and a latch-controlling differential amplifier for controlling the period of the pulse application to said high voltage switch, and



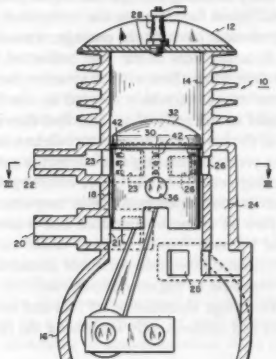
a distributing switch electrically connected to said ignition coil for distribution of high voltage pulses in sequence to the engine spark plugs.

4,058,104

HYDROSTATIC BEARING PISTON FOR A TWO-CYCLE ENGINE

Jon R. Swoager, Imperial, Pa., assignor to Automation Equipment, Inc., Imperial, Pa.

Filed Apr. 23, 1975, Ser. No. 570,783
Int. Cl.² F02F *1/00*
U.S. Cl. 123—193 CP **8 Claims**



1. A two stroke internal combustion engine comprising:

a cylinder having a plurality of continuous vertical rib portions with a plurality of port openings disposed therebetween, the inner most portion of the ribs forming the inner most portion of the cylinder wall;

a piston supported for reciprocating longitudinal movement within said cylinder comprising a head portion and a skirt portion extending from the head portion;

at least one annular groove for receiving a sealing ring formed at the upper end of the piston skirt;

sealing ring means secured by said at least one annular groove for providing a seal between said cylinder and said piston; and

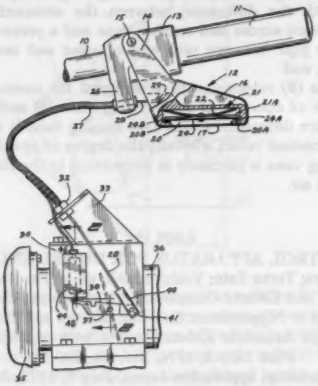
a plurality of bores through the skirt portion located beneath the head portion lower than said at least one annular groove and said sealing ring means with each bore being directed perpendicular at, and opening in close proximity to one of said vertical rib portions to cause a hydrostatic type bearing between the piston and the cylinder wall.

4,058,105

SNOWMOBILE SAFETY SWITCH SYSTEM

Carl W. Schellin, Deerwood, and John P. Lundberg, Pequot Lakes, both of Minn., assignors to Scorpion, Inc., Crosby, Minn.

Filed Apr. 15, 1976, Ser. No. 677,161
Int. Cl.² F02B *77/08*
U.S. Cl. 123—198 DC **10 Claims**



1. In an internal combustion engine having a carburetor, a throttle control arm on the carburetor movable from an idle position to working position, and spring loaded toward said idle position, a remote hand throttle actuator engagable by an operator on a surface and movable in response to force on the surface, linkage means between the throttle control arm and the hand throttle actuator to move the throttle control arm away from idle position when the hand throttle actuator is subjected to force from an operator, the improvement comprising an ignition disabling circuit for the internal combustion engine including a pair of switches, each having an open position and a closed position and each normally being spring loaded to the same position as the other, means to position a first of said switches adjacent the throttle control arm so as to be moved from its normal position when the control arm is in idle position, means positioning a second of said switches on said hand throttle actuator whereby said force on said surface sufficient to normally move the hand throttle actuator and connected throttle control arm from idle position moves said second switch from its normal position, and means to connect said first and second switches in series in the ignition disabling circuit whereby when both of said switches are in normal position the ignition system is disabled.

4,058,106

METHOD AND APPARATUS FOR RPM LIMITATION IN INTERNAL COMBUSTION ENGINES

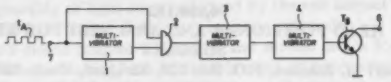
Ulrich Drews, Schwieberdingen; Bernd Kraus, Stuttgart; Erich Singer, Besigheim, and Hans Schnürle, Walheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 22, 1976, Ser. No. 679,379
Claims priority, application Germany, Apr. 22, 1975, 2517697
Int. Cl.² F02B *3/00, 77/00*
U.S. Cl. 123—198 DB **16 Claims**

1. A method for limiting the rpm in an internal combustion engine, said engine including fuel preparation means, comprising the steps of:

interrupting fuel supply for a predetermined period of time after the engine has reached a predeterminable limiting rpm; and

suppressing all fuel supply when the limiting rpm of the engine is exceeded and continuing to suppress all fuel



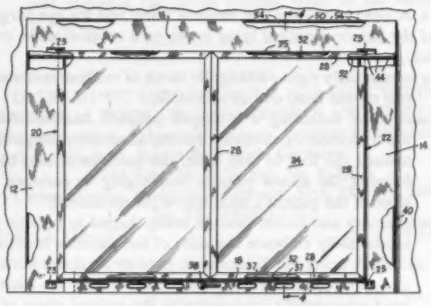
supply for a predetermined time after the engine rpm has again dropped below the limiting rpm.

4,058,107

COMBINATION ISOBARIC STEAM-HEATER AND ENCLOSURE FOR USE WITH FIREPLACES

Harrison F. Edwards, Norwich, N.Y., assignor to Norwich Laboratory, Inc., Norwich, N.Y.

Filed July 1, 1976, Ser. No. 701,689
Int. Cl.² F24B *7/06*
U.S. Cl. 126—121 **13 Claims**



1. An enclosure for a fireplace, comprising in combination:
a. a fireplace frame having substantially vertical side members and substantially horizontal top and bottom members extending between and respectively connected to the side members,
b. a pair of doors and means hingedly connecting the same to the frame, said doors being adapted to close off the space encompassed thereby,
c. each of said doors being constituted of two panes of tempered glass disposed in substantially parallel relation and having spacer means for maintaining said panes in closely spaced relation so as to define an air space therebetween,
d. said spacer means including door frames which extend completely around the peripheral portions of the panes and confine and conceal such portions,
e. said door frames having series of ventilating holes at locations adjacent the top and bottom members of the fireplace frame whereby heated air in said air space is convected upward through the holes adjacent the top member, said air being drawn into the air space through the holes adjacent the bottom member,
f. said convected air providing heat to the room and at the same time reducing the temperature of both panes of glass of each door.

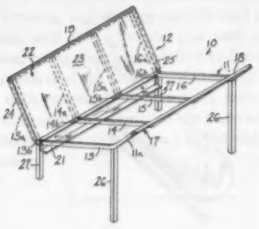
4,058,108

GRATE

Emil F. Dahlquist, Clinton, Conn., assignor to Radiant Grate, Inc., Clinton, Conn.

Filed Sept. 8, 1975, Ser. No. 611,008
Int. Cl.² F23H *13/02*
U.S. Cl. 126—137 **2 Claims**

1. A grate comprising a log-supporting portion and a log-retaining portion, said log-supporting portion comprising a plurality of spaced apart members disposed at an angle of 20° to 30° to the horizontal, said retaining portion extending from said supporting members at an angle therewith of essentially 90°, said supporting members being spaced apart a sufficient distance to allow embers from logs in said grate to fall through and form a bed thereunder, the total area of spacing between said supporting members being substantially greater than the area of said supporting members so as to permit heat due to burning of logs in said grate to radiate outwardly from the



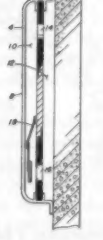
front of said grate, and a removable plate-like wall member disposed over said retaining portion, and legs supporting said grate above a base plane a sufficient distance to permit buildup of an ember bed on the base plane beneath said supporting portion while leaving a defined space between the underside of said log-supporting portion and a formed ember bed whereby embers from said grate will fall from said grate essentially in front of said retaining portion, said plate-like member having end flanges which fit about the ends of said log-retaining portion.

4,058,109

SOLAR HEATING AND INSULATING APPARATUS

Ronald J. Gramm, Pittsburgh, Pa., assignor to Sunwall Incorporated, Pittsburgh, Pa.

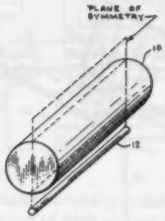
Filed May 7, 1976, Ser. No. 684,409
Int. Cl.² F24J *3/02*
U.S. Cl. 126—270 **7 Claims**



1. A solar heating apparatus for attachment to a wall of a building, comprising:
a transparent panel spaced from the wall;
an enclosure attached to the transparent panel, sealing the space between the panel and the wall;
a heat absorber of closed-cell insulating material spaced between the transparent panel and the wall, such that a first air space is formed between the transparent panel and the heat absorber, and a second air space is formed between the heat absorber and the wall, said first and second air spaces being in communication through openings above and below the heat absorber; and
heat sensing damper means for closing at least one of the

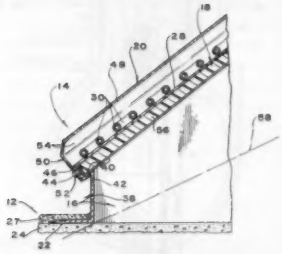
openings between the first and second air spaces in response to changes in temperature.

4,058,110
WIDE ANGLE SOLAR HEAT COLLECTION SYSTEM
F. Sheppard Holt, 46 Emerson Road, Winchester, Mass. 01890
Filed Aug. 5, 1975, Ser. No. 602,043
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 2 Claims



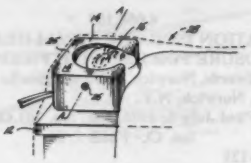
1. A solar energy collection system comprising right circular cylinder lens means for aberrated focusing of solar energy such that said lens means exhibits moderate scan properties in a plane normal to the plane of symmetry; and a hollow body located in the focal region of said lens means, said body having an inlet and an outlet to render it capable of having a circulant flow therethrough, said body being of a size to accommodate focused solar energy received over a moderate scan angle in a plane normal to the plane of symmetry of said means.

4,058,111
SOLAR COLLECTOR
I. L. Wendel, St. Petersburg, Fla., assignor to James L. Lowe, St. Petersburg, Fla.
Continuation-in-part of Ser. No. 596,513, July 16, 1975. This application Feb. 3, 1976, Ser. No. 654,888
Int. Cl.[2] F24J *3/02*; E04B *7/18*
U.S. Cl. 126—271 3 Claims



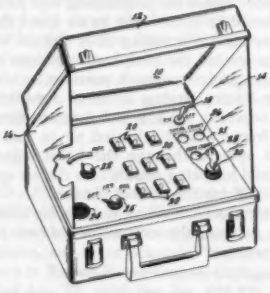
1. A solar collector comprising, a casing positioning a solar collector heat pan at a desired inclination for receiving solar energy, said casing having a substantially continuous side wall with an upper edge portion, said casing having first means for mounting said wall on a support, and said casing having shoulder means at and extending along said upper edge portion and supporting the heat pan facing upwardly within said casing, said wall including an upper portion extending upwardly from said shoulder means to an upper edge of said edge portion, said heat pan including a heat plate substantially flush with said edge, and a solar energy transmitting cover overlying said upper edge portion and mounted on said casing, said cover including a substantially continuous depending solar energy transmitting flange extending upwardly from said edge and said heat plate for passage of solar energy through the last said flange, and the last said flange having a lower portion encircling said upper portion of said wall for effectively preventing entry of wind or foreign matter within the cover.

4,058,112
HEAD POSITIONER AND ARM REST FOR EYE SURGERY
Robert M. Johnson, P.O. Box 525, Kirkland, Wash. 98033
Filed Aug. 19, 1976, Ser. No. 715,651
Int. Cl.[2] A61B *19/00*
U.S. Cl. 128—1 R 1 Claim



1. A head positioner and surgeon's arm rest for eye surgery and the like on a patient lying prone on a surgical table, comprising:
a substantially right-rectangular block of resilient material to rest on the head end of said table;
said block including a U-shaped patient's head-receiving, top-to-bottom open cavity, having an access passage open toward the foot of said table, the portions of said block forming the access passage converging to embrace the sides of the patient's neck above the shoulders;
said cavity and access passage being shaped to receive and substantially embrace the sides of the patient's head; and
said block being of a thickness to provide an upper horizontal support and work surface at each side of the patient's head substantially coplanar with the general plane of the surgical situs on the patient whose head is disposed in said cavity.

4,058,113
TIME PERCEPTION DEVICE
Louis G. Fields, 11662 Sunset Blvd., Los Angeles, Calif. 90049
Filed Nov. 13, 1975, Ser. No. 631,472
Int. Cl.[2] A61B *5/16*
U.S. Cl. 128—2 N 25 Claims



1. Apparatus for performing a self-administered time perception test by a test subject, including:
a plurality of individual light sources arranged in an array for providing a plurality of individual visual indications;
first means coupled to the plurality of individual light sources for controlling the individual light sources to flash intermittantly and with all but one of the light sources

controlled to flash at regular intervals and with one of the light sources controlled to flash at irregular intervals;

a plurality of second means coupled to the plurality of individual light sources for selecting any individual one of the plurality of light sources judged by the test subject to be the light source flashing at irregular intervals;

third means coupled to the first and second means for randomly selecting one of the plurality of light sources to flash at irregular intervals after one of the second means is selected by the test subject,

coincidence means coupled to the first and second means to produce a coincidence signal when the test subject selects the particular one of the plurality of light sources flashing at irregular intervals;

a first counter means coupled to the coincidence means for counting each production of a coincidence signal to count the number of correct selections by the test subject; and

a visual indicator coupled to the first counter means for visually displaying the number of correct selections and additionally including lockable means, including locked and unlocked positions coupled to the visual display for shielding the visual display when in the locked position and exposing the visual display when in the unlocked position.

4,058,114

ULTRASONIC ARRANGEMENT FOR PUNCTURING INTERNAL BODY ORGANS, VESSELS AND THE LIKE

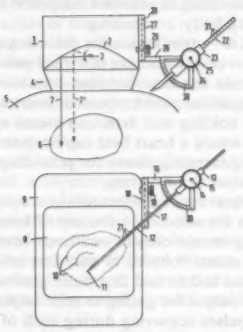
Richard Soldner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 10, 1975, Ser. No. 612,176

Claims priority, application Germany, Sept. 11, 1974, 2443558

Int. Cl.² A61B *10/00*

U.S. Cl. 128—2 V **4 Claims**



1. An ultrasonic surgical device for puncturing the body of a patient comprising

an ultra sound applicator including a housing and an ultrasonic beam transmitter positioned within said housing for scanning a beam toward a region of the body of the patient, viewing means operatively associated with said ultrasound applicator and including a housing and a viewing screen for producing an image of the region of the body being scanned, with the image being located with respect to said viewing means housing at a position corresponding to the location of the applicator housing with respect to the region of the body being scanned,

an elongated aiming pin, pin mounting means for adjustably mounting said aiming pin on said viewing means housing and for releasably locking same in place with respect thereto,

said aiming pin having a distal end movable in overlying relation with respect to said viewing screen, said pin mounting means having means for ascertaining the position of said distal end of said aiming pin relative to said viewing means housing

an elongated puncturing cannula, and cannula mounting means for adjustably mounting said cannula on said ultrasound applicator housing and for releasably locking same in place with respect thereto,

said cannula having a distal end movable with respect to said ultrasound applicator housing to reach the region of the body being scanned, said cannula mounting means having means for ascertaining the position of said distal of said cannula relative to said ultrasound applicator housing, and said aiming pin and said pin mounting means, and said cannula and said cannula mounting means, being disposed relative to their respective housings such that the location of the distal end of the aiming pin with respect to the viewing means housing can be duplicated with respect to the location of the distal end of the cannula with respect to the ultrasound applicator housing.

4,058,115

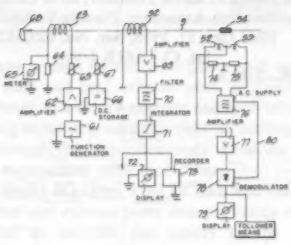
METHOD AND APPARATUS FOR EXAMINING HUMAN PERIODONTAL TISSUES

Friedrich M. O. Förster, Grathlwohlstrasse 4, D-7410 Reutlingen, Germany

Filed Nov. 3, 1975, Ser. No. 628,130

Int. Cl.² A61B *5/10*

U.S. Cl. 128—2 S **18 Claims**



1. Apparatus for examining the human periodontium in which a force acts on the tooth to be examined and the movement of the tooth resulting from the force is determined, the force being transmitted to the tooth by a rigid tube medium sliding in a transducer head and the deflection of the tooth is measured, comprising:

a conductor through which current flows;

a means for producing magnetic flux passing through the conductor at right angles;

a source of supply of electric current connected to the conductor such that the flux density of the magnetic flux is constant within a certain area in the direction in which the resultant force acts between the rigid medium and the transducer head; and

a dynamic displacement pickup installed in the transducer head including a coil connected to the tube and a permanent magnetic circuit having an air gap in which said coil is movably located, and said dynamic displacement pickup is carried by the transducer head and generates an electric signal proportional to the deflection of the tube from a predetermined position, the electric signal from the dynamic displacement pickup being connected to follower means through an amplifier, and the follower means drivingly connected with the transducer head to move the same until the coil is centrally located in the constant area of the magnetic flux in the air gap.

4,058,116

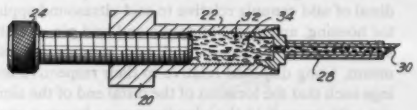
METHODS, MATERIALS, AND DEVICES FOR PROVIDING ELECTRICAL CONDUCTIVITY PARTICULARLY FOR LIVING BEINGS

Louis Bucalo, 155 Roberts St., Holbrook, N.Y. 11741

Division of Ser. No. 513,295, Oct. 9, 1974, Pat. No. 4,005,699. This application Dec. 17, 1975, Ser. No. 641,494

Int. Cl.[2] A61B 5/04

U.S. Cl. 128—2.1 E **17 Claims**



1. In a method of treating a living being, the step of injecting with a syringe, into tissue of the living being, an absorbable viscous substance, in which a plurality of solid bodies are suspended to an extent sufficient to be distributed throughout the viscous substance in an amount sufficient to change the characteristics of the tissue receiving the injection, at least a portion of the bodies being non-absorbable, and at least a portion of the non-absorbable bodies being electrically conductive.

4,058,117

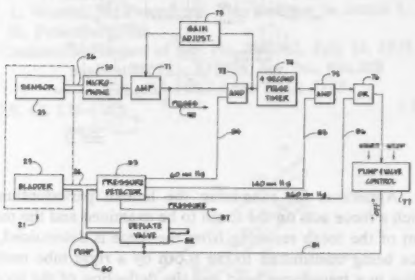
BLOOD PRESSURE MEASURING APPARATUS

William J. Kaspari, Portola Valley; Herman Wong, Los Altos Hills, and Joseph L. Kirch, Hollister, all of Calif., assignors to Palo Alto Research Associates, Portola Valley, Calif.

Filed Oct. 17, 1975, Ser. No. 623,242

Int. Cl.[2] A61B 5/02

U.S. Cl. 128—2.05 A **6 Claims**



1. A blood pressure measuring apparatus comprising:

an inflatable cuff adapted to occlude an artery when inflated;

means for inflating said cuff means from a cuff condition of non-inflation to a cuff pressure sufficient to occlude an artery without interruption;

means mounted in said cuff means for detecting sounds created when said cuff means occludes an artery;

means coupled to said detecting means for amplifying said sounds;

means responsive to said amplifying means during said inflation of said cuff means for automatically reducing the gain of said amplifying means when said sounds exceed a predetermined amplitude during said uninterrupted inflating of said cuff means, said gain-reducing means comprising means for reducing said gain of said amplifying means only when said cuff means has been inflated to at least a first predetermined pressure;

means responsive to a cessation of said sounds for a predetermined period during said uninterrupted inflating of said cuff means for automatically stopping said inflating of said cuff means;

means for deflating said cuff means automatically after said stopping of said inflating of said cuff means;

means for detecting the first sound having a predetermined amplitude following the initiation of said deflating of said cuff means;

means responsive to said detecting of said first sound for displaying a first cuff pressure, as a measure of systolic blood pressure in said artery; and

means responsive to subsequent sounds during continued deflating of said cuff means for automatically displaying a second cuff pressure as a measure of diastolic blood pressure when a first one of said subsequent sounds has an amplitude which is less than a predetermined amplitude.

4,058,118

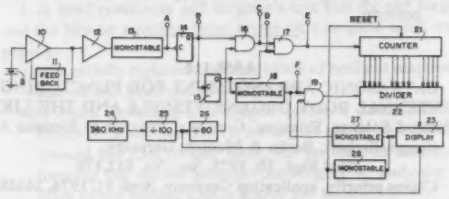
PULSE COUNTER

Lawrence John Stupay, Endicott, and Carl Frederick Truesdell, Johnson City, both of N.Y., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 19, 1976, Ser. No. 668,616

Int. Cl.[2] A61B 5/02

U.S. Cl. 128—2.05 T **15 Claims**



1. A cardiotachometer adapted to be attached to a living body and for providing an accurate indication of the heart beat rate of the living body, comprising:

a. heart beat detection means for detecting each heart beat and for providing a discrete electrical pulse for each heart beat, wherein the time between immediately successive discrete electrical pulses represent heart beat intervals;

b. means for holding said detection means against the body at a point where a heart beat can be detected;

c. first pulse generating means for providing a series of first electric pulses at a first rate;

d. first heart beat interval select means coupled to said detection means for selecting a first set of heart beat intervals comprising certain ones of said heart beat intervals;

e. first gate means coupled to said first heart beat interval select means and to said first pulse generating means and having an output for gating to said output the number of said first pulses occurring during each of said first set of intervals, said number of gated first pulses representing the heart beat rate in pulses per heart beat interval;

f. a counter;

g. second heart beat interval select means coupled to said first heart beat interval select means for selecting certain ones of said first set heart beat intervals,

h. second gate means coupled to said first gate means output and to said second heart beat interval select means and having an output coupled to said counter for gating said first pulses occurring during each of said selected first set intervals into said counter;

i. second pulse generating means for providing a series of second electric pulses at a second rate;

j. third gate means coupled to said second pulse generating means and having an output for gating a given number of said second pulses to said output during a predetermined time interval;

k. divider means coupled to said counter and to said third gate means output for dividing said given number of said second pulses by the number of said first pulses occurring during one of said selected first set heart beat intervals to

thereby provide an output indicative of the heart beat rate of the living body; and

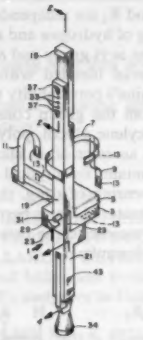
1. display means coupled to said divider means for displaying the heart beat rate of the living body.

4,058,119

WALKING DEVICE

Craig D. Rosequist, Box 265, Star Route, Mesa, Wash. 99343

Filed Aug. 12, 1976, Ser. No. 706,543
Int. Cl.² A61F 3/00
U.S. Cl. 128—80 R 10 Claims



1. A walking device comprising:

a standard of such length as to reach from the ground substantially to the wearer's waist,

an elongated knee and shin support extending substantially at right angles to said standard substantially at knee height, of such length as to extend substantially from the knee cap to ankle of the wearer,

at least one strap on said standard above said knee and shin support for encircling the wearer's thigh,

and at least one strap on said knee and shin support horizontally spaced from said standard for encircling the wearer's calf,

said standard comprising:

a thigh piece extending upwardly from said knee and shin support and a support piece extending downwardly from said knee and shin support, said support piece and said thigh piece being joined in a manner such that said support piece is quickly collapsible relative to said thigh piece, while remaining attached thereto, to a position such that when the wearer is seated the support piece does not extend substantially beyond said knee and shin support,

and manually quickly releasable locking means for locking said support piece against collapse.

4,058,120

VAPORIZER CAROUSEL FOR ANESTHESIA MACHINE

Frederick Caparrelli, Locust Valley, N.Y., and Henry Leong, Kendall Park, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 29, 1976, Ser. No. 700,861
Int. Cl.² A61M 16/00
U.S. Cl. 128—188 14 Claims

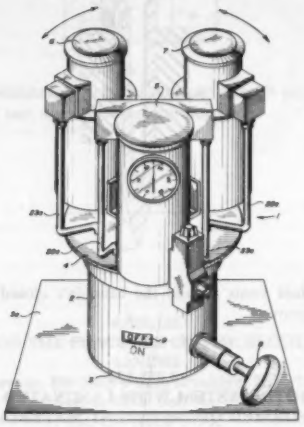
1. An improved anesthesia dispensing machine comprising:

a. a directing block member having a feed port, and an exhaust port including first means for providing fluid communication between an external gas supply and the feed port, and second means for providing fluid communication between the exhaust port and the exterior of the dispensing machine;

b. a turntable having means for mounting a plurality of anesthesia vaporizers thereon, the turntable having a plurality of sets of an inlet port and an outlet port, with each set of an inlet port and an outlet port adapted for communication with the interior of a single vaporizer, said turntable and said block mounted for movement relative to each other;

c. means for effecting rotational and reciprocal movement between the turntable and the directing block member for effecting engagement of the feed port with an inlet port and an outlet port with the exhaust port for a preselected vaporizer;

d. means for sealing said feed port against said inlet port and said exhaust port against said outlet port when engaged;



e. valve means in each of said inlet ports, said outlet port, said feed port and said exhaust port, the valve means normally being in a closed position and each of said valve means being separately actuable thus permitting communication through the respective ports when the ports are in sealing engagement with each other;

whereby sealingly engaging a set of inlet and outlet ports with the feed and exhaust ports thus providing communication from an external gas supply to the feedport, through the juxtaposed inlet port, a vaporizer, an outlet port, and through the juxtaposed exhaust port, to the exterior of the dispensing machine.

4,058,121

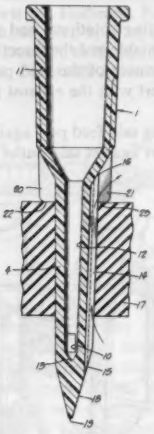
VENTED NEEDLE FOR MEDICAL LIQUIDS

Pradip Vinobchandra Choksi, Northridge; Donald Leroy Johnston, Arcadia, and Walter Seemayer, Burbank, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed June 29, 1976, Ser. No. 700,900
Int. Cl.² A61M 5/00
U.S. Cl. 128—221 13 Claims

1. A lateral delivery vented needle comprising: a cannula with a closed forward end, a rear end, and a side port adjacent its closed forward end; said cannula having a longitudinal external groove with a forward end adjacent the side port and with a rear end adjacent a rear portion of the cannula; stop means of the cannula preventing a rear portion of the groove from entering a container's resilient stopper; said cannula and stop means forming a unit that has a lateral gas vent means to an exterior of the stop means; and a hub joined to a rear portion of the cannula, whereby the needle can puncture a resilient

closure of a container, and liquid can be laterally injected into the container through the cannula's side port, while gas within



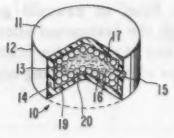
the container vents around the cannula's closed end to the cannula groove.

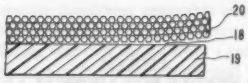
4,058,122

OSMOTIC SYSTEM WITH LAMINATED WALL FORMED OF DIFFERENT MATERIALS

Felix Theeuwes, Los Altos, and Atul D. Ayer, Belmont, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 654,195, Feb. 2, 1976, Pat. No. 4,008,719. This application Dec. 15, 1976, Ser. No. 750,698
The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.[2] A61M *31/00*
U.S. Cl. 128—260 **15 Claims**



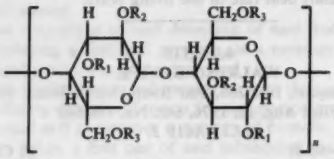


1. An oral osmotic system for dispensing a drug to the gastrointestinal tract of an animal, said system comprising:

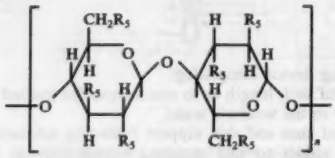
a. a shaped, laminated wall having a permeability to fluid expressed by the equation:

$$k = \frac{h}{SA} \cdot \frac{Q_p}{t} \cdot \frac{1}{\pi}$$

wherein K is the permeability of the wall to fluid present in the tract, Q_p is the amount of drug delivered from the system in time t, A is the area of the system, h is the thickness of the laminated wall, S is the solubility of drug in fluid imbibed into the system and π is the osmotic pressure of drug in the system, the laminated wall comprising (1) a lamina formed of a semipermeable material that is permeable to the passage of fluid and impermeable to the passage of drug, and which material comprises the formula:



wherein R_1, R_2, and R_3 are independently selected from the group consisting of hydrogen and acyl with at least one of R_1, R_2, and R_3 an acyl group and n is at least 5, said semipermeable material blended with a flux regulator that governs the lamina's permeability to fluid and it is a member selected from the group consisting of a polyhydric alcohol, polyalkylene glycol, poly(α,ω)-alkylenediol, aliphatic diol and an ester of an alkylene glycol, and (2) a lamina that maintains its physical and chemical integrity during the dispensing of drug, the lamina comprising a semipermeable material that is permeable to the passage of drug and impermeable to the passage of drug, said material having the formula:



wherein R_5 is a member selected from the group consisting of alkyl, alkoxy, alkylcarbonate, alkylcarbamate, alkylsulfamate and acyloxy and n is at least 5, said material blended with at least one of a member selected from the group consisting of a flux regulator that governs the permeability of the lamina to fluid and a plasticizer that lowers the second-order phase transition temperature of the lamina forming material;

b. the laminated wall surrounding and forming a compartment containing a drug selected from the group consisting of locally and systemically acting drugs;

c. a passageway in the wall communicating with the compartment and the exterior of the system for dispensing drug from the system; and,

d. wherein in operation when the system is in the gastrointestinal tract, fluid therefrom is imbibed through the laminated wall into the compartment in a tendency towards osmotic equilibrium at a rate determined by the permeability of the laminated wall and the osmotic pressure gradient across the laminated wall, thereby forming a solution containing drug which is dispensed at a controlled rate through the passageway over a prolonged period of time.

4,058,123

COMBINED IRRIGATOR AND EVACUATOR FOR CLOSED WOUNDS

Edwin A. May, Ridgewood, N.J., assignor to International Paper Company, New York, N.Y.

Filed Oct. 1, 1975, Ser. No. 618,482
Int. Cl.[2] A61F *5/44*
U.S. Cl. 128—278 **19 Claims**

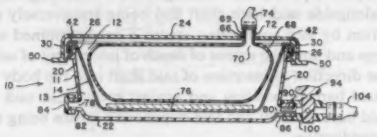
1. A combined irrigator and evacuator for use in bathing a wound with an irrigating solution and removing fluid from the wound, comprising:

a. a rigid housing forming a chamber;

b. means under bias for dividing said chamber into a pressure-irrigating section and a suction-evacuating section,

said bias tending to reduce the volume of said pressure-irrigating section and increase the volume of said suction-evacuating section;

c. seal means for preventing fluid flow between said pressure-irrigating section and said suction-evacuating section;



d. access means providing fluid flow access to said sections; and

e. means in said pressure-irrigating section for containing said irrigating solution.

4,058,124

DISPOSABLE ABSORBENT ARTICLES CONTAINING PARTICULATE, FREE-FLOWING, INSOLUBLE SWELLABLE POLYMERS

Steven N. Yen, Highland Mills, and Frederick D. Osterholtz, Warwick, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 303,880, Nov. 6, 1972, Pat. No. 3,900,378, which is a continuation-in-part of Ser. No. 194,511, Nov. 1, 1971, abandoned. This application Mar. 28, 1975, Ser. No. 563,128

Int. Cl.² A61F *13/16, 13/18*

U.S. Cl. 128—284 **5 Claims**

1. A disposable absorbent article containing a mixture prepared by:

a. blending at least one water soluble pulverulent hydrophilic polymer and at least one pulverulent inert filler in a ratio of polymer to filler of from about 1:9 to about 9:1, a substantial portion of said filler having a particle size less than that of said polymer and present in an amount sufficient to cover a substantial portion of the surface area of said pulverulent polymer.

b. thereafter while said blending is continued, contacting said mixture under thorough agitation with a finely divided spray of water at a rate and in an amount not to exceed that at which the mixture is maintained in a free-flowing particulate form, and

c. thereafter exposing said mixture in said free-flowing particulate form to ionizing radiation for a period of time to crosslink said polymer.

4,058,125

FORCE DISTRIBUTING ADHESIVE TAPE TAB FOR DISPOSABLE DIAPERS

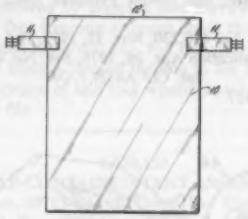
Irving S. Ness, Princeton, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 659,313, Feb. 19, 1976. This application June 23, 1976, Ser. No. 699,013

Int. Cl.² A61F *13/16*

U.S. Cl. 128—287 **8 Claims**

1. In a disposable diaper of the type having an inside surface and an outside surface, an improved adhesive tape tab comprising: a tape having a first portion attached to one surface of the diaper and having a second, extendable portion for attachment to another part of the diaper; adhesive material on one surface of the second portion of said tape; a flexible, open-mesh sheet material having a first portion fixedly attached to the adhesive surface of the second portion of said tape, and having a second portion fixedly attached to the surface of the diaper opposite from the surface which said first portion of said tape is attached, whereby during use fastening forces transmitted by the second, extendable portion of said tape are distributed to the



inside and outside surfaces of said diaper through said tape first portion and said open-mesh second portion.

4,058,126

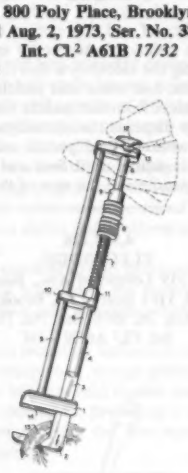
DEVICE FOR THE FRACTURE OF THE BLOOD VESSEL LINING

Harry H. Leveen, 800 Poly Place, Brooklyn, N.Y. 11209

Filed Aug. 2, 1973, Ser. No. 385,075

Int. Cl.² A61B *17/32*

U.S. Cl. 128—305 **3 Claims**



1. A fracture device for the selective fracture of the inner lining of a blood vessel without severing the surrounding outer layer of the vessel which comprises in combination (a) an anvil member 1 having a dull blade affixed thereto supported on a guide arm 5 acting as the superior member of said fracture device and (b) an inferior hammer member 2 having a handle connected to the anvil member said hammer member positioned in register with said anvil member and spring loaded by a spring means positioned between the handle and the guide arm, said anvil and hammer opposingly interconnected by means of a slider arm 3 to work in cooperation whereby a blood vessel interposed therebetween can be partially fractured by a shock imparted to the hammer by a controlled compression of the said spring means and subsequent release of the same causing said hammer to force the blood vessel against the dull blade of the anvil and cutting the inner lining of the same while not cutting the outer layer thereof.

4,058,127

METHOD OF APPLYING VISCOUS FLUID TO A SURFACE

Gilbert Buchalter, 555 Mount Prospect Ave., Newark, N.J. 07104

Division of Ser. No. 416,230, Nov. 15, 1973, Pat. No. 4,002,239. This application Apr. 28, 1976, Ser. No. 681,074

Int. Cl.[2] A61N *1/04*

U.S. Cl. 128—417 **2 Claims**

1. A method for applying an electrolyte from a cup to a paddle for use on the skin of a patient, said cup being a flexible container having an open face, peripheral edges defining the open face, a layer of bonding agent disposed on said peripheral edges, and a protective cover positioned on said container to close off said open face and being removably secured to said layer of bonding agent, comprising the steps of providing an electrode paddle, providing said cup having a supply of electrolyte therein, removing said protective cover from said cup without removing said layer of bonding agent therefrom, pressing the open face of said cup against the surface of said electrode paddle to removably secure by said bonding agent said container having the electrolyte therein to the surface of said electrode paddle, and when said paddle is ready for use, removing said container from said paddle while squeezing said container to thereby dispense the electrolyte contents thereof onto said paddle, whereby said paddle may then be urged against the skin of a patient until firm and secure contact is made between the paddle and the skin of the patient.

4,058,128

ELECTRODE

Howard A. Frank, 319 Longwood Ave., Boston, Mass. 02115, and Paul M. Zoll, 1101 Beacon St., Brookline, Mass. 02146

Filed Aug. 26, 1976, Ser. No. 718,142

Int. Cl.[2] A61N *1/04*

U.S. Cl. 128—418 **5 Claims**

1. An electrode comprising a barb element adapted to be inserted into an organ of a mammal, a placement element to slidingly engage said organ during insertion of said barb element, and transversely extending connecting means for connecting a first extremity of said barb element and said placement element and lead means electrically connected to said connecting means for connection to an electrical instrument, said barb element including a longitudinally extending shaft and a barb at a second extremity of said barb element, said barb being sharp in a longitudinal direction away from said first extremity for easy insertion into the body of the mammal and blunt in the opposed longitudinal direction to hold said barb in its inserted position, said placement element providing a substantially fixed placement-defining surface extending longitudinally alongside said barb shaft and being transversely spaced therefrom by said connecting means a predetermined amount to gauge and limit the extent of depth of insertment of said barb and the direction of insertion of said shaft into the body and to hold said barb in position and against rotation in said organ, and said barb element and said connecting means being electrically conductive.

4,058,129

CONTINUOUS PROCESS FOR THE PRODUCTION OF A PASTE WITH ADDITIVES WHICH CAN BE FORMED INTO A SMOKABLE MATERIAL

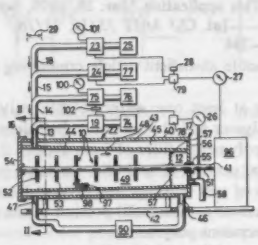
Monique Béringer, Saint Louis, France, and Heinz Spörri, Egg, Switzerland, assignors to Fabriques de Tabac Reunies S.A., Neuchatel, Switzerland

Filed Dec. 8, 1975, Ser. No. 638,951

Claims priority, application Luxembourg, Mar. 27, 1975, 72156; Mar. 27, 1975, 72157

Int. Cl.[2] A24B *3/14*

U.S. Cl. 131—140 C **6 Claims**



1. A process for the production of a paste which is to be converted into a smokable material, comprising the steps of continuously admitting pulverized plant parts and a liquid into one end of an elongated comminuting chamber at such a rate that the chamber is constantly filled to capacity, said admitting step comprising introducing the plant parts and liquid along separte paths but in close proximity to each other to insure thorough moistening of plant parts immediately after entry into the chamber; stirring the contents of the chamber and simultaneously comminuting the plant parts to thus convert the comminuted plant parts and the liquid into paste; and evacuating the paste at the other end of the chamber.

4,058,130

PIPE-CIGARET

George C. Curtiss, 832 NE. 124th St., North Miami, Fla. 33161

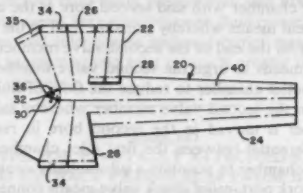
Filed Jan. 8, 1976, Ser. No. 632,731

Int. Cl.[2] A24F *13/06, 1/22*

U.S. Cl. 131—192 **11 Claims**

1. A pipe-cigaret comprising a substantially T-shaped single sheet of flexible material having an elongated section of a substantially rectangular shape and a shorter and wider section of a substantially rectangular shape extending laterally from an edge at one end thereof, said elongated section having panels

foldable and extending the length thereof to form a tubular stem for drawing smoke therethrough to a free tip at the other



end thereof, and said shorter section having panels foldable to form a bowl for filling with tobacco.

4,058,131

IMPROVING HAIR BODY AND MANAGEABILITY WITH DIPERISOPHTHALIC ACID

Richard J. Crawford, Highland Park, and Clarence R. Robbins, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 506,462, Sept. 16, 1974, abandoned, which is a continuation of Ser. No. 219,510, Jan. 20, 1972, abandoned. This application Mar. 11, 1976, Ser. No. 666,378

Int. Cl.[2] A45D *7/04;* **A61K** *7/06*

U.S. Cl. 132—7 **5 Claims**

1. A method of improving the manageability and body of hair which comprises treating the hair with an effective amount of an aqueous solution having a pH of 8 to 11 and containing about 0.1 to about 10% by weight of diperisophthalic acid for a treatment time, up to one hour, sufficient to improve the manageability and body of the hair while not effecting a change in the color thereof.

4,058,132

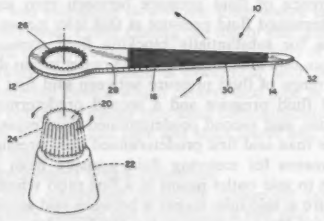
NAIL POLISH BOTTLE OPENER

Frederick P. Dietz, Rte. 2, Box 201, Monee, Ill. 60449, assignor to Charles Jacobus; Josephine Jacobus, both of Chicago; Leroy Wiltgen and Rita Wiltgen, both of Franklin Park, all of, Ill., part interest to each

Filed June 6, 1975, Ser. No. 584,509

Int. Cl.[2] A45D *29/00*

U.S. Cl. 132—73 **1 Claim**



1. A tool utilized in finger nail care, said tool being substantially planar with opposite substantially flat sides and having a generally, elongate teardrop shape with a wide end portion at one end, a narrow end portion at the opposite end and a mid-portion connecting said end portions, said wide end portion having a generally circular opening therein sized to fit over and between the top and bottom of a conically shaped cap having serrations thereon for a bottle of nail polish, the inwardly facing periphery of said opening having serrations formed thereon which are configured to mate with the serrations on the cap and to grippingly engage the bottle cap whereby said tool can be used as a nail polish bottle opener by first placing the opening over a conically shaped serrated bottle cap, followed by gripping said narrow end portion of said tool and then exerting a torque about the coaxial axes of said opening and the bottle cap, and one side of said tool having a nail file surface formed thereon in the mid-portion and narrow end portion of said tool whereby said tool also can be used as a nail file.

4,058,133

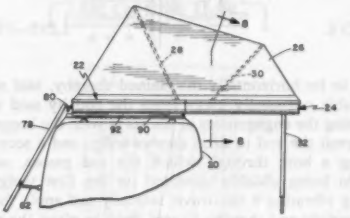
SELF-CONTAINED TENT ASSEMBLY

Dwight L. Barr, 10711 Kariuto Court, San Diego, Calif. 92124, and Leslie A. Barr, 6205 Crystal Lake Ave., San Diego, Calif. 92119

Filed Feb. 4, 1976, Ser. No. 655,210

Int. Cl.[2] B60D *3/32*

U.S. Cl. 135—4 A **22 Claims**



9. A self-contained tent assembly comprising:

first and second half-shells hinged together at their respective inner ends and capable of folding together in mating relation for defining an enclosure and extendably into aligned relation for defining a planar platform;

a flexible sheet attached to the peripheries of said half-shells, said sheet being shaped and dimensioned to fold within said half-shells when same are mated and for defining an enclosed space above said platform when said half-shells are extended;

support means attached to said half-shells for folding within said half-shells when same are mated and for supporting said sheet above said platform when said half-shells are extended;

said flexible sheet including inclined portion which defines a screened opening, and trough-defining flap means attached to the inside of said flexible sheet along the lower edge of said opening for providing a watershed for draining any water entering the tent assembly through said screened opening.

4,058,134

INTERCEPTOR ACTUATED BY SEISMIC VIBRATIONS

Atsushi Komatsu; Kuichiro Miyazawa, both of Saku; Yoshotomo Yamaura, Yachiho, and Akira Asanuma, Saku, all of Japan, assignors to Kabushiki Kaisha Shinko Seisakusho, Usudamachi, Japan

Filed Dec. 11, 1975, Ser. No. 639,820

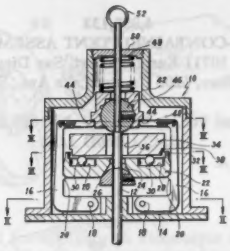
Claims priority, application Japan, Dec. 16, 1974, 49-144317; Dec. 16, 1974, 49-144318; Dec. 16, 1974, 49-144319

Int. Cl.[2] F16K *17/36*

U.S. Cl. 137—38 **13 Claims**

1. Apparatus actuated by seismic vibration comprising a housing, a rod extending vertically through said housing and being vertically movable between upper and lower positions, a spring means acting on said rod for biassing the rod downwardly, a ball mounted on said rod, a keeper member including a central portion rockably engaged with the ball and an outer projecting portion with a step therein, a plurality of stays

pivotably mounted in said housing and disposed around said rod for undergoing inclination relative to the rod, said stays having upper ends engaged in the step of the keeper member to support the rod in the upper position, tension springs mounted on upper portions of the stays and biassing each stay toward the rod, a weight support member fixed to the lower portion of the rod, a first weight having a bore through which the rod passes, said weight being rockably supported by the weight support member and having an outer portion resting on said



stays to be horizontally maintained thereby, said stays being pivotable outwardly away from the rod by said weight for releasing the engagement of the stays with the keeper member to permit the rod to drop downwardly, and a second weight having a bore through which the rod passes, said second weight being slidably mounted on the first weight so that during vibration it can travel laterally and apply force to said first weight and thereby to said stays to pivot the same away from the rod.

4,058,135

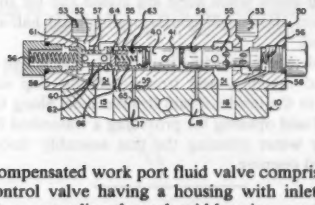
COMPENSATED WORK PORT FLUID VALVES AND WORK PORT COMPENSATORS

John D. Petro, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Division of Ser. No. 547,410, Feb. 6, 1975. This application Dec. 16, 1976, Ser. No. 751,203

Int. Cl.[2] F15B *13/04*

U.S. Cl. 137—106 **4 Claims**



2. A compensated work port fluid valve comprising a directional control valve having a housing with inlet and outlet ports, a bore extending through said housing, a valve member movable in said bore, a first inlet chamber intersecting said bore and connected to the inlet port, a work chamber spaced from said first inlet chamber, an outlet chamber intersecting said bore, said work chamber being adapted to be connected to said first inlet chamber in one position of the valve member and to the outlet chamber in a second position of said valve member, a second bore in said housing, a second inlet chamber intersecting said second bore and connected to said work chamber, a second outlet chamber intersecting said second bore and spaced from said second inlet chamber, a work port connected to said second outlet chamber, a second valve member having an intermediate annular groove is movable in said second bore, resilient bias means urging said second valve member toward the second inlet chamber into a first position in which the second inlet chamber and second outlet chamber are in communication through the annular groove in the second valve member, a first signal passage connecting the second inlet chamber to the second bore at the resilient means whereby pressure fluid in the second inlet chamber supplements the resilient means in urging the second valve member into said first position and a second signal passage connecting the first inlet chamber with said second bore at the end opposite the resilient means whereby pressure fluid in the first inlet chamber acts on the end of the second valve member opposite the resilient means to urge the second valve member toward the second outlet chamber to reduce the flow of fluid around the groove in the second valve member whereby said second valve member is moved in the second bore in response to pressure differential between the first inlet chamber and the second inlet chamber to maintain a substantially constant pressure at the work port, relief check valve means connecting said second inlet and second outlet chambers, said relief check valve means is formed by an axial bore in the second valve member having spaced radial connections through the valve member side wall and resilient biased valve means in said axial bore between said spaced radial passages adapted to open when the pressure in said second outlet chamber exceeds a preselected value.

4,058,136

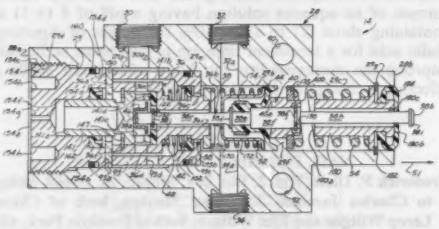
PRESSURE DISTRIBUTION VALVE

Edward J. Falk, St. Louis County, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Oct. 15, 1976, Ser. No. 732,803

Int. Cl.[2] G05D *11/03*

U.S. Cl. 137—110 **8 Claims**



1. A pressure distribution valve comprising:

a. a body;

b. inlet means for supplying fluid pressure to said body;

c. outlet means for receiving fluid pressure from said body;

d. first means for providing open fluid communication between said inlet means and said outlet means during the occurrence of fluid pressure between zero and a first predetermined fluid pressure at said inlet means;

e. means for substantially blocking fluid communication between said inlet means and said outlet means during the occurrence of fluid pressure between said first predetermined fluid pressure and a second predetermined fluid pressure, said second predetermined fluid pressure being higher than said first predetermined fluid pressure;

f. first means for metering fluid pressure from said inlet means to said outlet means in a first ratio when the fluid pressure at said inlet means is between said second predetermined fluid pressure and a third predetermined fluid pressure, said third predetermined fluid pressure being higher than said second predetermined fluid pressure;

g. second means for metering fluid pressure from said inlet means to said outlet means in a second ratio when the fluid pressure at said inlet means is between said third predetermined fluid pressure and a fourth predetermined fluid pressure, said fourth predetermined pressure being higher than said third predetermined fluid pressure;

h. third means for metering fluid pressure from said inlet means to said outlet means in a third ratio to the fluid pressure at said inlet means during the occurrence of fluid pressures at said inlet means between said fourth fluid

pressure and a fifth fluid pressure, said fifth fluid pressure being greater than said fourth fluid pressure;

i. said third ratio being greater than said second ratio and said second ratio being greater than said first ratio; and

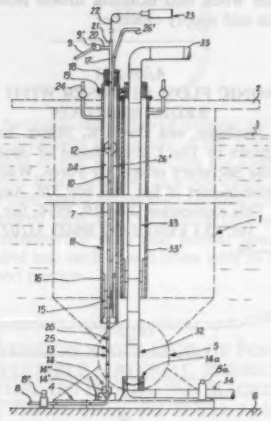
j. second means for providing open fluid communication between said inlet means and said outlet means when the fluid pressure at said inlet means is greater than said fifth fluid pressure.

4,058,137

RISER PIPE FOR PIVOTALLY ATTACHED STRUCTURE USED TO EXTRACT PETROLEUM FROM BENEATH A BODY OF WATER

Jacques de Saint Palais; Paul Laffont, both of Pau, and Jean Mourlevat, Cazeres, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Apr. 9, 1976, Ser. No. 675,556
Claims priority, application France, Apr. 14, 1975, 75.11505
Int. Cl.[2] E02D *21/00*
U.S. Cl. 137—236 S 11 Claims



1. In apparatus for extracting petroleum from beneath a body of water, which apparatus comprises a base at the bottom of said body of water, a base pipe carried by said base, an elongated structure pivotally attached at its lower end to said base by means of a universal joint and projecting above the surface of said body of water, a hollow guide shaft fixed to said structure and extending downward from above said surface toward said base, a plug closing the top of said guide shaft, a pipe within said guide shaft made from a plurality of successive pipe sections, one of which is lowermost, and at least one elastic centering device which centers said pipe in said guide shaft and comprises means providing communication between the spaces between said pipe and shaft above and below said centering means,

the improvement which comprises:

a remotely controlled releasable connector occupying a stationary position and comprising a first part fixed to said lowermost pipe section and a second part fixed to said base pipe,

a slidable connector connecting said lowermost pipe section to the one above it, and

a cylindrical sleeve in said guide shaft within which said slidable connector is slidable,

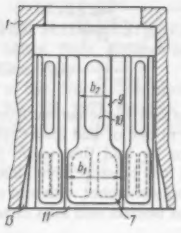
said sleeve having an inner diameter slightly less than that of the remainder of said guide shaft, said slidable connector comprising means providing communication between the spaces below said pipe and guide shaft above and below said connector, and the part of said releasable connector fixed to the lowermost section of said pipe having an external diameter less than the internal diameter of said sleeve.

4,058,138

STRAIGHTWAY VALVE

Evgeny Vasilievich Viktorov, ulitsa Tambovskaya, 8, kv. 12; Igor Ivanovich Novikov, ulitsa Bela-Kuna, 22, korpus 1, kv. 31; Tatyana Fedorovna Kondratieva, Sytninskaya ploschad, 3, kv. 16; Georgy Vasilievich Gubarev, prospekt Veteranov, 55, kv. 240; Margarita Sergeevna Yamschikova, Nevsky prospekt, 147, kv. 56, all of Leningrad; Vasily Dmitrievich Vasiliev, ulitsa Gorkogo, 45, kv. 7, Sumy; Georgy Mikhailovich Kontsevich, prospekt K. Marxa, 1, kv. 12, Sumy; Anatoly Sergeevich Gubinsky, prospekt K.Marxa, 23, kv. 55, Sumy; Anatoly Alexeevich Velikasov, ulitsa Novomestenskaya, 25, kv. 18, Sumy; Vladimir Ignatievich Taradonov, ulitsa Gazety "Pravda", 34, kv. 78, Sumy, and Valery Pavlovich Isakov, prospekt Metallistov, 80, korpus 3, kv. 251, Leningrad, all of U.S.S.R.

Filed Aug. 12, 1975, Ser. No. 604,078
Int. Cl.[2] F16K *15/14*
U.S. Cl. 137—512.1 3 Claims



1. A straightway valve including an inlet and an outlet for a working fluid, and comprising: a body with an internal polyhedral surface; at least one through hole in said body; a sleeve installed coaxially in said hole and secured to said body at the side of said inlet, said sleeve having an external polyhedral surface, defining an inner space, and being installed so as to form a passage between said external surface of the sleeve and said internal surface of the body; ports on the side surface of said sleeve for communicating said inner space with said passage; additional channels for said outlet of the working medium at places of intersection of edges made in said body hole at the level of said ports; flexible plates cantilevered between said body and said sleeve; said plates having port-closing and resilient portions; said plates closing said ports and having a variable width decreasing towards the points of plate fastening to said sleeve so that the ratio of the widths of said port-closing portions to that of said resilient portions is 8:1.1.

4,058,139

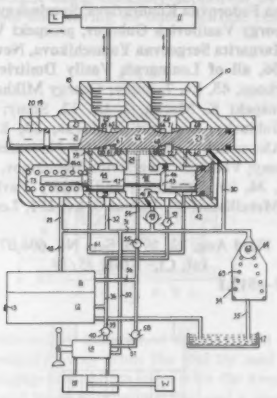
LOAD RESPONSIVE FLUID CONTROL VALVES

Tadeusz Budzich, 80 Murwood Drive, Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 522,324, Nov. 8, 1974, Pat. No. 3,998,134, and a continuation-in-part of Ser. No. 559,818, March 19, 1975, Pat. No. 3,984,979, and a continuation-in-part of Ser. No. 655,561, Feb. 5, 1976. This application July 27, 1976, Ser. No. 709,202
Int. Cl.[2] F15B *13/08*
U.S. Cl. 137—596.13 12 Claims

12. A valve assembly supplied with pressure fluid by a pump comprising a housing having a fluid inlet chamber, a fluid supply chamber, first and second load chambers, and fluid exhaust means, first valve means for selectively interconnecting said fluid load chambers with said fluid supply chamber and said fluid exhaust means, variable fluid metering orifice means responsive to movement of said first valve means be-

tween said load chambers and said exhaust means, second valve means having throttling means and isolating means between said inlet chamber and said supply chamber operable to throttle by said throttling means fluid flow from said inlet chamber to said supply chamber to maintain a relatively constant low pressure level in one of said load chambers connected to said exhaust means by said first valve means and to isolate by



said isolating means said inlet chamber from said supply chamber when pressure in one of said load chambers connected to said exhaust means by said first valve means exceeds said relatively constant low pressure level, and connecting means to connect said supply chamber with said exhaust means when said isolating means isolates said inlet chamber from said supply chamber.

4,058,140

LOAD RESPONSIVE FLUID CONTROL VALVES

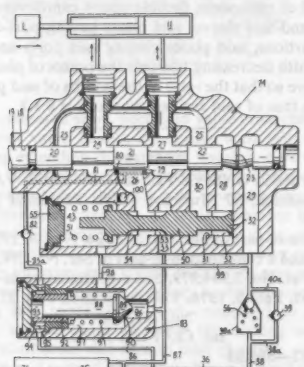
Tadeusz Budzich, 80 Murwood Drive, Moreland Hills, Ohio 44022

Continuation of Ser. No. 559,818, March 19, 1975, Pat. No. 3,984,979. This application Aug. 25, 1976, Ser. No. 717,758

The portion of the term of this patent subsequent to Oct. 12, 1993, has been disclaimed.

Int. Cl.[2] F15B *13/08*

U.S. Cl. 137—596.13 **17 Claims**



1. A valve assembly comprising a housing having a fluid inlet chamber, a fluid supply chamber, first and second fluid load chambers, a fluid outlet chamber, and fluid exhaust means, first valve means for selectively interconnecting said fluid load chambers with said fluid supply chamber and said fluid outlet chamber, variable fluid metering orifice means responsive to movement of said first valve means between said outlet chamber and said exhaust means, second valve means responsive to pressure upstream of said variable orifice means having positive load throttling means and isolating means between said inlet chamber and said supply chamber, said positive load throttling means operable to maintain pressure upstream of said variable orifice means at a low relatively constant preselected pressure level when one of said load chambers is connected to said outlet chamber by said first valve means and said load chamber is subjected to pressure not higher than said low relatively constant preselected pressure level, said isolating means operable to isolate said inlet chamber from said supply chamber when one of said load chambers is connected to said outlet chamber by said first valve means and said load chamber is subjected to pressure higher than said low relatively constant preselected pressure level, and fluid replenishing means operable to interconnect for fluid flow said supply chamber and said exhaust means when said isolating means isolates said inlet chamber from said supply chamber.

4,058,141

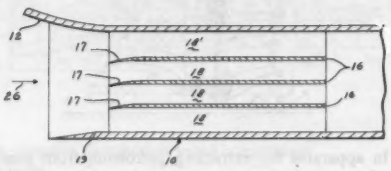
SUPERSONIC FLOW DIFFUSER WITH ENERGY REDISTRIBUTION

Siegfried H. Hasinger, and David K. Miller, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 606,378, Aug. 20, 1975, abandoned. This application July 19, 1976, Ser. No. 706,320

Int. Cl.[2] F15D *1/06;* **B64D** *33/02*

U.S. Cl. 138—39 **6 Claims**



1. A supersonic diffuser, comprising: at least four walls forming a non-axisymmetric diffuser flow channel; means forming a converging inlet and throat section in said channel; a wall extending forward of the flow channel and forming a continuous surface together with one wall of said flow channel; whereby in response to a flow of air along said continuous surface and into the diffuser flow channel a boundary layer forms along the wall extending forward of the flow channel and enters the diffuser flow channel; a plurality of blade members positioned within the diffuser channel downstream of the throat section; said blade members dividing the flow channel into a plurality of flow ducts which are substantially symmetrical around their own axis; means, on at least a portion of said plurality of blade members, for redirecting the flow in the diffuser channel in a direction toward the wall of said flow channel, which forms the continuous surface with the wall which extends forward of the flow channel.

4,058,142

PIPELINE FITTING

William J. Rankin, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.

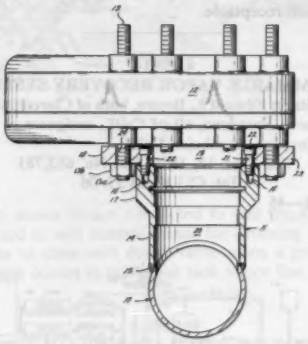
Filed May 4, 1976, Ser. No. 683,059

Int. Cl.[2] F16L *55/10*

U.S. Cl. 138—89 **4 Claims**

1. A side outlet fitting for a pipeline comprising a tubular

member having one end adapted to be attached to a pipeline to surround an opening therein and having another end with a plurality of threaded holes extending longitudinally thereinto with the holes terminating within said another end, said holes being arranged in a bolt circle of a first radius; an adapter plate extending across said another end and having (i) a central opening in alignment with the opening through the tubular member and of substantially the same size, (ii) unthreaded holes therethrough in respective register with said threaded



holes and each having a counterbored portion, (iii) an annular portion extending radially outwardly of the tubular member and (iv) a plurality of bolt holes through the annular portion with the bolt holes being arranged in a bolt circle of a second radius which is sufficiently larger than the first radius so that nuts can be screwed onto bolts extending through said bolt holes without interference with said tubular housing; and a capscrew threaded into each of said holes with its head within said counterbored portion.

4,058,143

CONSTANT TENSION REGULATOR OF POSITIVELY UNWOUND FLEXIBLE MATERIAL, PARTICULARLY WARP THREADS IN WEAVING MACHINES

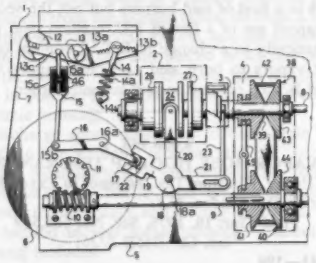
Jindrich Henzl; Jindrich Cerny, and Jaromir Malasek, all of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Apr. 22, 1976, Ser. No. 679,376

Claims priority, application Czechoslovakia, Apr. 22, 1975, 2775/75

Int. Cl.[2] D03D *49/06*

U.S. Cl. 139—110 **8 Claims**



1. A constant tension regulator for controlling the tension of positively unwound flexible material such as warp threads, comprising in combination,

a support frame,

a warp beam rotatably supported in said frame and adapted to unwind a plurality of warp threads therefrom,

sensing means contacting said plurality of unwinding warp threads to thereby sense the variations in tension in said threads, a change in tension in said threads causing a change of position of at least a portion of said sensing means;

an integrating unit operatively mounted in said frame and adapted to effect a first output corresponding to said change of position of said sensing means;

a proportional adjusting unit operatively mounted in said frame and adapted to effect a second output corresponding to said change of position of said sensing means;

means operatively connecting said integrating unit and proportional adjusting unit to said sensing means, said integrating unit and proportional adjusting unit having common means for adding said first and second outputs; and

a control member operatively connected, on the one hand, to said warp beam, and, on the other hand, to said common means to thereby adjust the unwinding speed of said warp beam in accordance with the tension sensed in said threads.

4,058,144

TAPE-SUPPORTED SLIDE-FASTENER ELEMENT

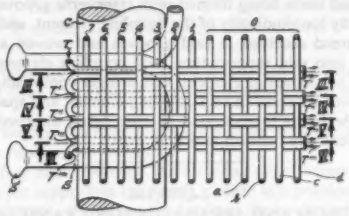
Ruggero Dal Negro, Milan, Italy, assignor to Italo Americana Prentice S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 21,778, March 23, 1970. This application Nov. 24, 1971, Ser. No. 201,738

Claims priority, application Italy, Mar. 21, 1969, 14395/69; Dec. 12, 1969, 25704/69

Int. Cl.[2] A44B *19/04*

U.S. Cl. 139—384 B **5 Claims**



1. In a slide fastener, in combination, a pair of slide-fastener halves and a slider of substantially elliptical cross-section, each slide-fastener half comprising:

a fastener element in the shape of a continuous coil with spaced-apart turns of generally elliptical configuration;

a core extending longitudinally of said coil through said turns;

a set of main warp threads parallel to said core disposed alongside said coil in a median plane thereof;

a set of ancillary warp threads parallel to said core partly enshrouding said coil and resting on the turns thereof on the side adjacent said main warp threads, in an array diverging from said median plane above and below the coil, the spacing of said ancillary warp threads from said median plane increasing progressively to an intermediate zone of the coil remote from said main warp threads; and

weft-thread means interwoven with all said warp threads to form a stringer tape, said weft-thread means passing around said core at said intermediate zone on the side remote from said warp threads to anchor said core to said stringer tape;

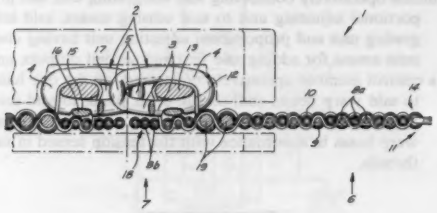
said slider straddling the coils of said slide-fastener halves while bracketing said ancillary warp threads, said slider bearing upon the coils of said fastener halves by way of at least the majority of said ancillary warp threads.

4,058,145

SLIDE FASTENER

Alfons Fröhlich, Essen; Julius Dahlmann, Sprockhovel, and Günter Volter, Wuppertal, all of Germany, assignors to Opti Patent-, Forschungs- und Fabrikations AG, Glarus, Switzerland

Filed July 15, 1976, Ser. No. 705,440
Int. Cl.[2] A44B *19/42*
U.S. Cl. 139—384 B **4 Claims**



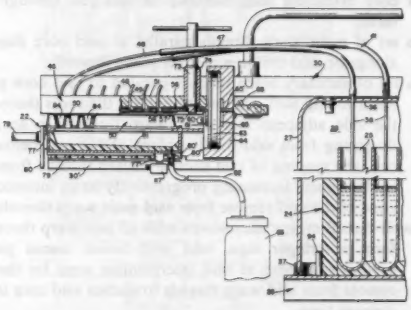
1. A slide-fastener stringer having a pair of stringer halves, each of said stringer halves including a respective support tape and a continuous coupling element mounted on said support tape, said support tape comprising a sewing strip and a facing strip adjacent said sewing strip, both of said strips being formed with warp threads, said support tape having a ground weft thread extending the full width of said tape and interwoven with said warp threads, and a binding weft thread extending the width of said sewing strip and securing said coupling element to said support tape with reverse loops, said coupling element having a succession of coupling heads adapted to interdigitate with an opposing similar coupling element, and limbs connected to said heads and resting against said support tape, said limbs being formed with transverse grooves aligned generally longitudinally of the coupling element, and an insertion thread received in said grooves and woven as a warp thread into said support tape, said coupling element being a helical turn coupling element, said stringer comprising a textile filler cord received in said coupling element and spaced away from the heads thereof, said grooves being disposed substantially centrally beneath said filler cord.

4,058,146

METHOD AND APPARATUS FOR TRANSFERRING LIQUID

Paul Stuart Citrin, Danbury, Conn., assignor to Dynatech Laboratories Incorporated, Alexandria, Va.

Filed July 11, 1975, Ser. No. 595,005
Int. Cl.[2] B65B *3/04*
U.S. Cl. 141—1 **23 Claims**



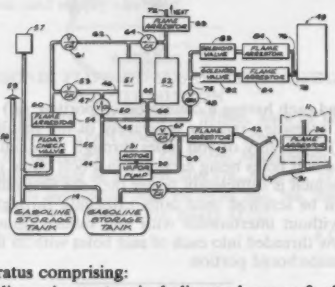
1. A method of transferring identical small quantities of liquid from each of a multiplicity of individual supply containers arranged in predetermined relative locations to a corresponding multiplicity of closely spaced receptacles arranged in the same relative locations, with random spacing between the various associated pairs of receptacles and relatively located containers, which comprises the steps of establishing separate continuous passage direct fluid communications between each container and its associated receptacle, and simultaneously forcing liquid from each container into its associated receptacle for a predetermined time while relatively controlling the flow in each passage so that during said predetermined time the same measured amount of liquid is dispensed from each passage into each receptacle.

4,058,147

FLAMMABLE VAPOR RECOVERY SYSTEM

Marvin L. Stary; Edward L. Brown, both of Claremont, and Eric L. Pridonoff, Pasadena, all of Calif., assignors to Clean Air Engineering, Inc., Anaheim, Calif.

Filed Sept. 12, 1975, Ser. No. 612,781
Int. Cl.[2] B65B *31/06*
U.S. Cl. 141—45 **15 Claims**



1. Apparatus comprising:

a liquid dispensing system including tank means for holding a flammable liquid, hose means for dispensing said liquid, and discharge nozzle means on said hose means;

means for collecting flammable vapors of said liquid, with varying B.T.U. content, from said dispensing system and including collection line means for withdrawing vapors from the vicinity of said nozzle means during a dispensing operation;

two burners connected to said vapor collecting means to receive therefrom and burn collected vapors of varying B.T.U. content, said two burners having different burning characteristics for burning vapors of different high and low B.T.U. contents respectively; and

automatic control means operable to burn said collected vapors in a first of said burners but not the second when said vapors are of a first B.T.U. content, and responsive automatically to a change in B.T.U. content of said collected vapors to burn said collected vapors when of a second B.T.U. content in said second burner.

4,058,148

VAPOR HOSE HOOKUP ASSURANCE

Gordon C. Potter, Houston, Tex., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Mar. 18, 1976, Ser. No. 668,549
Int. Cl.[2] B65B *3/26*
U.S. Cl. 141—198 **2 Claims**

1. Apparatus to assure proper vapor hose hookup in the transfer of a volatile liquid from a truck tank to a storage tank comprising:

a dump valve on said truck tank;

a fill pipe on said storage tank;

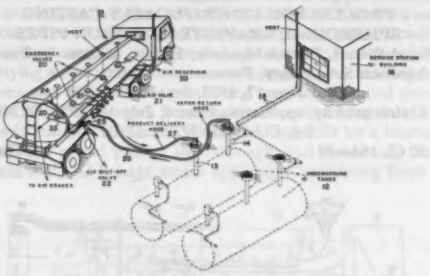
a delivery hose for connecting said dump valve and said fill pipe;

a vapor line on said truck tank;

a vapor line on said storage tank;

a vapor return hose for connecting said truck tank vapor line and said storage tank vapor line;

control means connected to said dump valve capable of being actuated to open and close said dump valve; and



vacuum sensor means connected to said truck tank vapor line and to said control means for actuating said control means to close said dump valve when a predetermined vacuum occurs in said truck tank vapor line.

4,058,149

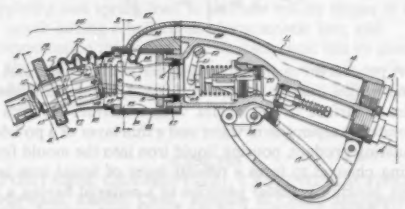
ATTITUDE VALVE FOR A GASOLINE DISPENSING NOZZLE WITH A VAPOR RECEIVING SYSTEM

William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Sept. 2, 1975, Ser. No. 609,761

Int. Cl.[2] B65B *31/06*

U.S. Cl. 141—301 **12 Claims**



1. A liquid fuel dispensing nozzle having a vapor receiving system for receiving vapors displaced from a motor vehicle fuel tank when being filled by insertion of the discharge spout of the nozzle into the fillpipe of the fuel tank, and having an attitude valve which, when in a closed position, prevents the flow of vapors from the storage tanks, through a vapor return line and the vapor receiving system, into the atmosphere when the nozzle is not in use and placed in its rest position, and wherein the attitude valve obtains an open position when the nozzle is in position for dispensing, said nozzle comprising:

a. a nozzle housing;

b. a discharge spout connected to the nozzle housing for insertion into a fillpipe of a fuel tank;

c. a vapor receiving system surrounding the discharge spout;

d. an attitude valve having a valve housing secured in fixed relation to the nozzle, and having a movable valve member located in said valve housing, wherein said valve housing includes:

i. a first port,

ii. a second port,

iii. means for utilizing the pressure at the first port which is greater than the pressure at the second port during operation of the nozzle to maintain the movable member in its closed position wherein the attitude valve is in a closed position, said means including a valve seat in fluid communication with the first and second ports, said valve seat being located within the valve housing so that when the nozzle is placed in its rest position, the movable valve member becomes seated on the valve seat by the force of gravity, between the valve seat and the first port, and any fluid pressure at the first port which is greater than the fluid pressure at the second port causes the movable valve member to be urged against the valve seat, and

iv. means, responsive to the nozzle being placed in its dispensing position, for receiving the movable valve member, so that the movable valve member is unseated from the valve seat and fluid flow from the second port to the first port, through the valve seat, can take place;

e. means for providing fluid communication between the vapor return line and the first port of the attitude valve; and

f. means for providing fluid communication between the second port of the attitude valve and the vapor receiving system.

4,058,150

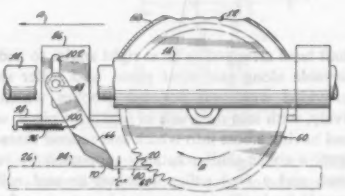
WOOD CUTTING APPARATUS

Charles A. Pennington, 2910 E. Virginia, Apt. 17, West Covina, Calif. 91791

Filed Mar. 9, 1976, Ser. No. 665,246

Int. Cl.[2] B27C *9/00*

U.S. Cl. 144—1 R **15 Claims**



1. Portable apparatus for cutting wood, said apparatus being movable over a workpiece as a unit, comprising, in combination:

a saw having a toothed blade and a motor coupled in operative relationship therewith;

a scarfing blade having a knife cutting edge thereon; and,

means for supporting the scarfing blade at a position spaced in advance of the saw blade along the projected cutting path thereof, with the knife cutting edge being disposed approximately in alignment with one edge of the projected cut of the saw blade,

whereby the scarfing blade is adapted for making a smooth advance knife surface cut in the wood along one edge of the projected cutting path of the saw blade.

4,058,151

AUTOMATIC LUMBER FEEDING DEVICE IN COMBINATION WITH A WOOD WORKING MACHINE

Nobuya Yonezu, Nagoya, Japan, assignor to Minami Kogyo Kabushiki Kaisha, Inuyama, Japan

Filed Oct. 4, 1976, Ser. No. 728,891

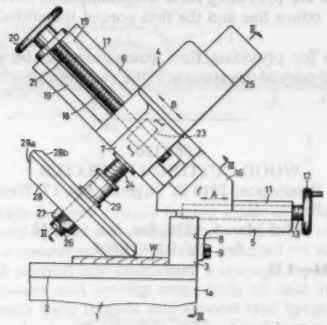
Claims priority, application Japan, Oct. 3, 1975, 50-135807[U]

Int. Cl.[2] B27B *31/00;* **B27C** *1/12*

U.S. Cl. 144—246 E **2 Claims**

1. A lumber feeding device to be used in combination with a wood working machine having a table on which lumber to be worked is placed; a ruler member provided on said table, said ruler member having an operative surface thereon which is vertically disposed, said device having a fixed bracket adapted to be secured to said ruler member of said wood working machine, said fixed bracket consisting of a pair of dovetails in parallel on the upper surface thereof, a central groove longitudinally extended between said dovetails and a threaded shaft rotatably supported within said groove which is rotated by

turning a handle provided to the outer end thereof, a moveable bracket consisting of a reciprocating member having two dovetail grooves which engage, respectively, with said dovetails of said fixed bracket, said reciprocating member having a boss into which said threaded shaft is engaged, a strut piece secured to said reciprocating member in an inclined condition in respect to said fixed bracket, said strut piece being longitudinally provided with a groove and a pair of dovetails in parallel on both sides of said strut piece groove, a second threaded shaft rotatably supported within said strut piece groove, a



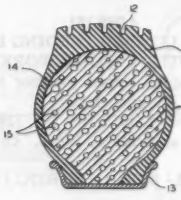
roller shaft head arranged to be at right angles to and reciprocally movable along said strut piece, said roller shaft head being provided with two dovetail grooves which engage, respectively, with said dovetails of said strut piece, said roller shaft head having a boss into which said second threaded shaft is engaged, a roller shaft rotatably supported by said roller shaft head, and a feed roller attached to said roller shaft, whereby said feed roller can press at least one surface of said lumber and feed the same along the operative surface of said ruler member.

4,058,152

AUTOMOBILE SAFETY TIRES

Gilbert Beck, Ludwigshafen; Ludwig Zuern, Bad Duerkheim, and Erhard Stahnecker, Ziegelhausen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation of Ser. No. 487,234, July 10, 1974, abandoned.
This application May 13, 1976, Ser. No. 685,976
Claims priority, application Germany, July 12, 1973, 2335481
Int. Cl.[2] B60C *17/00*
U.S. Cl. 152—310 **4 Claims**



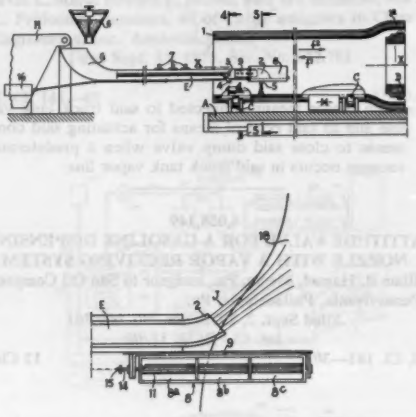
1. A safety tire and wheel assembly including: an outer wheel rim; a tubeless tire seated about said rim; and substantially closed-cell, foamed, discrete particles of a partially crystalline polymer of an olefin of from 2 to 6 carbon atoms filling the space between said rim and the interior walls of said tire, said discrete particles having a final diameter of from 3 to 40 mm and a bulk density of from 10 to 100 g/l, said tire being under a gas pressure of from 0.1 to 5 atmospheres gage, said discrete particles further having a reduced size when initially placed within the tire and expanding thereafter under said gas pressure in said tire.

4,058,153

PROCESS FOR CENTRIFUGALLY CASTING SPHEROIDAL GRAPHITE CAST IRON PIPES

Michel Pierrel, Pont-A-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed June 17, 1975, Ser. No. 587,564
Claims priority, application France, July 18, 1974, 74.24980
Int. Cl.[2] B22D *27/20, 13/02*
U.S. Cl. 164—58 **2 Claims**



2. A process for manufacturing spheroidal graphite cast iron by centrifugal casting in a rotary mould, comprising coating the inner surface of the mould with a mixture of silica and bentonite in suspension in water and a thin layer of a powdered inoculating product, pouring liquid iron into the mould from a pouring channel to form a tubular layer of liquid iron in the mould, pouring granular particles of a material having a high heat of fusion on a front of the liquid iron poured into the mould on a length which substantially corresponds to the length of said front and outside the stream of liquid iron issuing from the pouring channel, so as to increase the rate of the cooling of the liquid iron in the form of a tubular layer in the mould, from a zone of the layer spaced from the mould to the free inner surface of the tubular layer while slowing down the cooling of the liquid in the vicinity of the surface of the mould, said particles being poured in accordance with amounts which decrease along the front of liquid iron when the thickness of the liquid iron defined by said front increases.

4,058,154

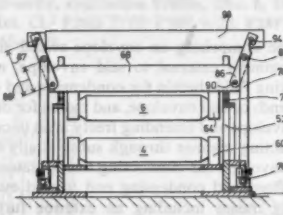
GUIDING AND SUPPORTING MEANS FOR CONTINUOUSLY CAST METAL STRAND

Hans Streubel, Dusseldorf, Germany; Karl Backhaus, West New York, N.J., and Wolfgang John, New York, N.Y., assignors to Concast Incorporated New York, Montvale, N.J.

Filed Sept. 23, 1976, Ser. No. 725,738
Int. Cl.[2] B22D *11/12*
U.S. Cl. 164—82 **21 Claims**

1. A roll segment for supporting and guiding continuously cast metal strands fed therethrough, said segment comprising opposing rolls for contacting the opposite sides of a continuously cast metal strand cast through a mold and passed from said mold between said rolls, first support means for supporting the roll in contact with one of said opposite sides of said strand, second support means for supporting the roll in contact with the other of said opposite sides of said strand, linkage means at

the opposite ends of said rolls for interconnecting said first and second support means and for maintaining said rolls in substantially parallel alignment at the opposite sides of said strand, said linkage means each including a first linkage member pivotally connected at one of its ends to one of said support means, a second linkage member pivotally connected at one of its ends to the other of said support means and pivotally connected at its opposite end to said first linkage member, and means for applying a restraining force to said linkage means, said support means and said rolls for permitting restricted, limited movement of said rolls away from each other when force in excess of said restraining force is applied to said rolls by a continuously cast strand passing therethrough, said restraining force means and said linkage means applying a restraining force to



said support means and said rolls when the cast strand is guided between said rolls as well as when said rolls are moved away from each other.

19. A method for supporting and guiding a continuously cast metal strand between a plurality of rolls acting at opposite sides of the strand surface, comprising the steps of:

urging under spring-load having a spring-load characteristic line at least one of the rolls towards the strand surface;

applying said spring-load to said one roll by means of a bell crank having a bell-crank characteristic line; and

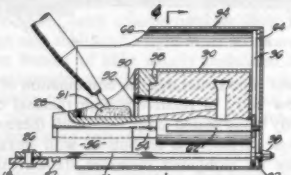
compensating the spring-load characteristic line by means of the bell-crank characteristic line in a manner to thereby produce a substantially constant load along the length of roll movement.

4,058,155

PORTABLE CENTRIFUGAL CASTING MACHINE

George Eash, Encino, Calif., assignor to Crown Manufacturing Company, San Marcos, Calif.

Filed Nov. 12, 1974, Ser. No. 523,025
Int. Cl.[2] B22D *13/06*
U.S. Cl. 164—152 5 Claims



1. An improved centrifugal casting device for open air use, comprising:

a. a crucible having a recess therein;

b. a flask having a closed outer end and an open inner end, said flask containing a mold in communication with said crucible recess through said inner end;

c. mounting means supporting said crucible and flask for rotation about a vertical axis laterally spaced from said crucible and flask; and

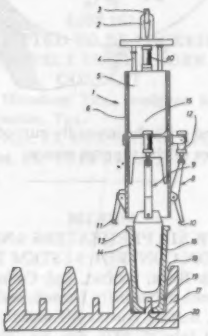
d. a shield having side walls and an end wall removably carried by said mounting means, said walls enclosing said crucible recess and said flask sides and outer end, and said mounting means including means supporting said end wall being outwardly of said crucible and flask during centrifugal operation.

4,058,156

DEVICE FOR THE REMOVAL OF CASTINGS FROM CHILL MOULDS

Magnus Gustav Georg Tiberg, Hallefors, Sweden, assignor to Ingenjorsfirman R. Ohrnell AB, Karlstad, Sweden

Filed Nov. 3, 1976, Ser. No. 738,398
Claims priority, application Germany, Nov. 3, 1975, 2549225
Int. Cl.[2] B22D *29/00*; B66C *1/00*
U.S. Cl. 164—405 2 Claims



1. Device for the removal of castings from chill moulds, comprising a main body portion adapted to be suspended from hoisting means, a frame releasably connected to said body by connecting means, first controllable gripping means provided to releasably hold the chill mould and second controllable gripping means provided to releasably hold the casting, both of said gripping means being carried by the frame, a ram releasably connected to the frame holding means for the ram adapted to hold the ram at a distance above the chill mould when the mold is held by said first gripping means, power means provided to actuate the connection means in order to release the frame from the main body and to actuate the holding means in order to release the ram to effect an impact of same against the chill mould.

4,058,157

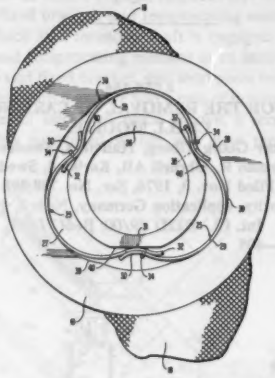
BEARING SUPPORT OF THE HEAT-EXCHANGER DISK OF REGENERATIVE HEAT-EXCHANGER

Klaus Wiegard, Esslingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Division of Ser. No. 531,795, Dec. 11, 1974. This application Aug. 31, 1976, Ser. No. 719,237
Claims priority, application Germany, Dec. 12, 1973, 23616979
Int. Cl.[2] F28D *19/00*
U.S. Cl. 165—8 17 Claims

1. A heat-exchanger disk of a regenerative heat-exchanger, which is secured under interposition of spring means on a rotatable support means, characterized in that the spring means are formed by leaf spring elements arranged one adjacent the other in the shape of a ring which are connected with each other at their overlapping ends, the leaf spring elements being provided with outwardly curved arcuate portions and with inwardly curved arcuate portions and being supported under

prestress with the outwardly curved arcuate portions thereof at counter surfaces provided in a central aperture of the heat-



exchanger disk and with the inwardly curved arcuate portions at counter surfaces of the support means.

4,058,158

REGENERATIVE AIR PREHEATERS AND SEAL FRAME SUSPENSION CONTROL SYSTEM THEREFOR

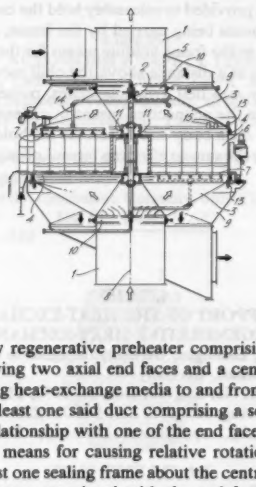
Johannes Cornelis Blom, Belfast, and Colin Edward Tindall, Ballynahinch, both of Northern Ireland, assignors to Davidson & Co. Limited, Belfast, Northern Ireland

Filed July 26, 1976, Ser. No. 708,424

Claims priority, application United Kingdom, Nov. 4, 1975, 45783/75

Int. Cl.² F28D *17/00*

U.S. Cl. 165—9 **13 Claims**



1. A rotary regenerative preheater comprising a regenerative mass having two axial end faces and a central axis, ducts for conducting heat-exchange media to and from the regenerative mass, at least one said duct comprising a sealing frame in close axial relationship with one of the end faces of the regenerative mass, means for causing relative rotation of the mass and the at least one sealing frame about the central axis, electrical contact means associated with the end face and with the sealing frame for changing the condition of an electrical circuit upon deviation from a desired said axial relationship of the end face and frame, electromagnetic drive means operatively linked to the sealing frame for altering the axial relationship with the said one end face, and control means responsive to the condition of the said electrical circuit to operate automatically to cause drive of the electromagnetic drive means and effect control of the said axial relationship.

4,058,159

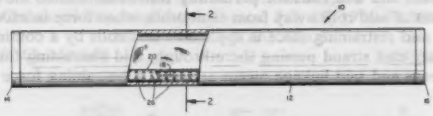
HEAT PIPE WITH CAPILLARY GROOVE AND FLOATING ARTERY

Wilfrido R. Iriarte, Long Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 10, 1975, Ser. No. 630,236

Int. Cl.² F28D *15/00*

U.S. Cl. 165—105 **11 Claims**



1. A heat pipe comprising an envelope sealed and closed from the environment external to said envelope, means for defining a working fluid therein for condensing and evaporating at opposed ends of said envelope, and means for defining an artery in said envelope and extending freely in an unconnected, thermally contacting manner through substantially the entire length of said envelope for conducting condensations of said working fluid from said condensing end to said evaporating end, said artery means including an exterior surface with means therein extending throughout the length of said artery means for enabling passage of said working fluid through said entire external surface.

4,058,160

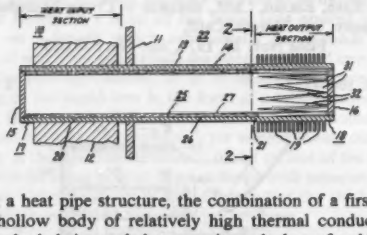
HEAT TRANSFER DEVICE

James C. Corman, Scotia, and Gunnar E. Walmet, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 449,744, March 11, 1974, Pat. No. 3,955,619, which is a continuation of Ser. No. 307,118, Nov. 16, 1972, abandoned, which is a division of Ser. No. 124,805, March 16, 1971, Pat. No. 3,746,081. This application Mar. 29, 1976, Ser. No. 671,164

Int. Cl.² F28D *15/00*

U.S. Cl. 165—105 **1 Claim**



1. In a heat pipe structure, the combination of a first elongated hollow body of relatively high thermal conductivity, said first body being sealed at opposite ends thereof and having an inside wall surface and an outside wall surface, said first body having an elongated chamber therewithin extending coaxially therewith from one sealed end thereof to an opposite sealed end thereof, said chamber being bounded by said inside wall surface of said first hollow body, a second elongated hollow body of wicking material situated in said chamber, said second body being open at opposite ends thereof, said wicking material having a thermal conductivity which is less than that of said first body, said second hollow body having an inside wall surface contacting said chamber and an outside wall surface contacting the inside wall surface of said first body, said second elongated body of wicking material having a plurality of elongated slots therein extending from one open end of said second body in a direction toward the opposite end of said second body so as to expose an elongated area of the inside wall surface of said first body, each of said elongated slots being tapered such that each slot is wider at said one open end

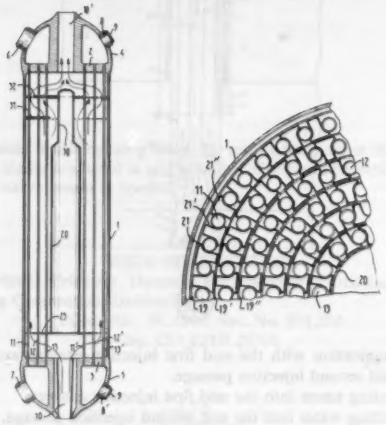
of said second body and becomes narrower as the slot extends longitudinally in a direction toward said opposite end of said second body, the elongated area so exposed extending from one sealed end of said first body in a direction toward the opposite end of said first body, said second elongated body of wicking material formed into a plurality of strips between said elongated slots, the strips truncated at their respective ends, and a vaporizable liquid occupying at least said chamber of said first body.

4,058,161

HEAT EXCHANGER

Georges Trepaud, 1, Rond-Point Bugeaud, 75016-Paris, France

Filed Aug. 7, 1975, Ser. No. 602,905
Claims priority, application France, Dec. 5, 1974, 74.39813
Int. Cl.[2] F28D *7/10*; F20F *9/22*; F28F *5/00*
U.S. Cl. 165—158 **3 Claims**



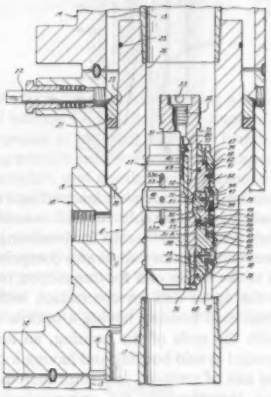
1. A heat exchanger comprising, an outer heavy structure including an outer cylindrical shell having fixed thereon an upper head having an outer wall and an inner coaxial wall defining an annular chamber therein and a large central passage, an annular base plate closing the lower end of said chamber and having a plurality of circular rows of perforations, a lower annular head fixed on said shell constructed similarly to the upper head and arranged symmetrically relative thereto whereby its inner coaxial wall defines a large central through passage allowing access to the interior of said structure, each head being provided with an aperture for flow of a fluid, axially through said shell, and a light inner structure comprising an annular bundle of alike axially undulated tubes each having quasi-sinusoidal undulations have successive arcuate deflections relative to the longitudinal axis thereof and spaced axially on the tubes with straight sections of the tubes therebetween, said tubes being arranged in a plurality of concentric circles and having upper and lower ends in the perforations of corresponding annular base plates of said heads and welded thereto, a closed central tubular shaft internally of said bundle of tubes secured to said bundle of tubes and extending less than the axial distance between the base plate of the upper head and that of said lower head and defining with said shell a heat exchange chamber in which said bundle of tubes is disposed, a series of annular radially spaced supporting rings arranged as supporting discs on different axially spaced supporting planes intermediate the deflections on said tubes respectively, paired concentric rings in each supporting disc being arranged on either side of each circle of tubes, a plurality of radially extending tubular stays each inserted between a pair of adjacent tubes in a common circle and welded to the outer and to the inner rings of each pair of paired rings respectively to firmly maintain said tubes without contact between the tubes and the rings, means for securing the peripheral outer rings of each supporting disc at each supporting plane to the inner surface of the outer shell, another series of annular, radially spaced, rings arranged as mobile retaining discs on different axially spaced planes tangential with the crests of the deflections of said tubes and free to move angularly about the longitudinal axis of said shell, each mobile retaining disc comprising paired concentric rings arranged on either side of each circle of tubes and a plurality of radially extending tubular stays, each stay being disposed between a pair of adjacent tubes in a common circle and welded to the outer and to the inner ring of each pair of rings respectively to maintain said tubes without contact between the tubes and the rings, and said tubes being arranged with said deflections in a common direction for expanding and rotating said mobile discs angularly in a common direction about the longitudinal axis of said shell.

4,058,162

WELL TOOL ADAPTED TO BE LOCKED WITHIN AND SEALED WITH RESPECT TO THE BORE OF THE WELL CONDUIT

Jerry D. Smith, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 22, 1976, Ser. No. 679,509
Int. Cl.[2] E21B *23/02, 33/129*
U.S. Cl. 166—124 **26 Claims**



1. Well apparatus, comprising a well conduit having a bore therethrough and a locking groove about the bore, a well tool including an inner body adapted to be connected to a running string for movement therewith within the bore, an outer body including first and second outer body sections, locking means carried by the first outer body section for radial movement with respect thereto, means connecting the outer body to the inner body for movement therewith into a position in which the locking means is radially opposite the locking groove, means on the bore engageable with means on the outer body to limit movement of said outer body with respect to the conduit when the outer body is so positioned, said connecting means permitting said inner body to be moved with respect to the outer body when movement of said outer body is so limited, first seal means carried by and disposed about the outer body in position to be expanded into sealing engagement between said outer body and the bore of the well conduit in response to vertical movement of said second section relative to said first section, means on the inner body for moving the locking means outwardly into locking position within the groove in the well conduit in response to initial movement of said inner body with respect to said outer body and independently of relative vertical movement of said outer body sections, and then engaging said second body section to move it vertically with respect to the first body section and thereby expand the first seal means

into sealing engagement with the well conduit bore in response to further movement of said inner body with respect to said outer body, and second seal means for sealing between said inner and outer bodies so as to cooperate with said first seal means in preventing flow past said outer body.

4,058,163

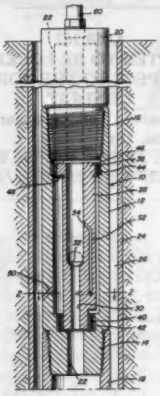
SELECTIVELY ACTUATED VIBRATING APPARATUS CONNECTED WITH WELL BORE MEMBER

James L. Yandell, 706 Shenandoah Drive, Conroe, Tex. 77302

Continuation-in-part of Ser. No. 386,106, Aug. 6, 1973, abandoned. This application July 9, 1976, Ser. No. 704,075

Int. Cl.[2] E21B *41/00*

U.S. Cl. 166—177 **11 Claims**



1. In combination with a member inserted into a well bore, a vibrating apparatus connectable to said member to impart lateral vibratory movement thereto for loosening the member in the well bore, said vibratory apparatus comprising a housing having means at the lower end for connection to the member and means at the upper end for connection with a source of pressurized fluid, said housing having a hollow interior communicating with the ends of the housing, an eccentric rotor rotatably journaled in said housing and having a center of mass offset from the axis of rotation, said rotor including a passageway extending therethrough for communication with the upper and lower ends of the housing, said passageway being coincident with the rotational axis of the rotor whereby passage of fluid therethrough will not rotate the rotor, means associated with said passageway to selectively prevent downward fluid flow therethrough and bypass passageway means providing communication past said means when the means is closed, said bypass passageway means including reaction means through which pressurized fluid passes to impart rotary movement to the eccentric rotor and cause the housing and member to vibrate when pressurized fluid flows downwardly through the bypass passageway means and is discharged from the housing into a low pressure zone in the well bore.

4,058,164

HEATING MINE WATER FOR RECOVERY OF IMMOBILE HYDROCARBONS

Xerxes T. Stoddard, 2617 W. 27th Ave., Denver, Colo. 80212, and Ruel C. Terry, 3090 S. High St., Denver, Colo. 80210

Filed Apr. 12, 1976, Ser. No. 676,001

Int. Cl.[2] E21B *43/24*

U.S. Cl. 166—303 **6 Claims**

1. A method of blending steam and water underground to generate superheated water in thermal recovery of minerals that are capable of becoming flowable upon application of heat, comprising the steps of

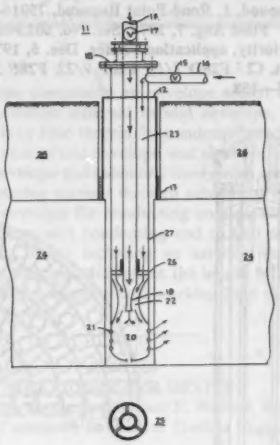
establishing a first injection passage between a surface location and an underground mineral deposit,

establishing a second injection passage between a surface location and an underground mineral deposit,

affixing a nozzle means positioned at the lowermost portion of the said first injection passage, the said nozzle means being positioned within a venturi means,

affixing the said venturi means positioned at the lowermost portion of the said second injection passage,

establishing a mixing chamber means in an underground location, said mixing chamber means being in fluid communication with the said first injection passage and the said second injection passage,



injecting steam into the said first injection passage,

injecting water into the said second injection passage,

decreasing the pressure of the steam,

condensing the steam into a liquid while

mixing the condensed steam with water in the said mixing chamber means, and

directing the resultant superheated water from the said mixing chamber means into the mineralized formation underground.

4,058,165

WELLBORE CIRCULATING VALVE

John C. Holden, and Gary Q. Wray, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 513,928, Oct. 10, 1974, which is a division of Ser. No. 288,187, Sept. 11, 1972, Pat. No. 3,850,250. This application Oct. 24, 1975, Ser. No. 625,433

The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.

Int. Cl.[2] E21B *43/00*

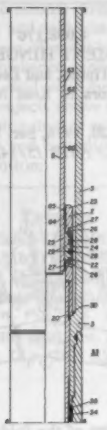
U.S. Cl. 166—314 **9 Claims**

1. A circulating valve for use in an oil well extending from the surface of the earth comprising:

normally closed valve means movable from a closed position to an open position;

opening means being arranged to produce a plurality of movements in said valve means for moving said valve means toward said open position, wherein said valve

means is opened only upon the last movement of said plurality of movements being effected; and



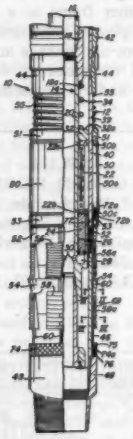
means in said opening means for setting the number of movements produced in said plurality of movements before said valve means is opened.

4,058,166

WELL SETTING TOOL

Charles D. Crickmer, Houston, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Mar. 29, 1976, Ser. No. 671,350
Int. Cl.² E21B *23/06*
U.S. Cl. 166—315 **24 Claims**



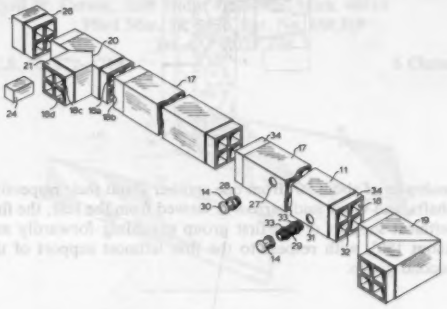
1. A well tool and setting tool assembly comprising: a well tool mandrel, at least a portion of which is of non-magnetic material; a setting tool mandrel coaxially and releasably positioned within said well tool mandrel; magnet means carried on the exterior of said setting tool mandrel and movable adjacent said non-magnetic portion of said well tool mandrel between a first and a second axial position; setting means carried on the exterior of said well tool mandrel; a magnetic-follower member of magnetic material carried on the exterior of said non-magnetic portion of said well tool mandrel and axially movable with respect thereto; said magnet means and said member being magnetically coupled wherein axial movement of said magnet means causes corresponding axial movement of said member; and said member being connected to said setting means to set said well tool at a desired location upon axial movement of said member from said first to said second axial position.

4,058,167

FIRE PROTECTION APPARATUS

Gerhard Granek, Downsview, and Clifford Paul Robert Greenan, Unionville, both of Canada, assignors to Clifford Paul Robert Greenan, Unionville, Canada

Filed July 13, 1976, Ser. No. 704,821
Int. Cl.² A62C *37/18*
U.S. Cl. 169—61 **8 Claims**



1. Fire protection apparatus comprising a conduit providing a plurality of internal longitudinally continuous compartments and having spaced at intervals along its length a plurality of fluid directing nozzles each connected to a respective compartment of the conduit, said nozzles being arranged to direct fluid to different respective localised areas adjacent the conduit, a plurality of fire hazard detectors, one detector being associated with each of said areas, and means for supplying fire-extinguishing fluid selectively to the compartments of the conduit, said means so operating under the control of the detectors as to supply the fluid to the compartment and nozzle connected thereto which directs the fluid to the area where a fire hazard is detected.

4,058,168

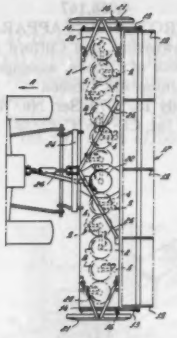
ROTARY HARROWS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Continuation of Ser. No. 552,596, Feb. 24, 1975, abandoned, which is a continuation of Ser. No. 338,155, March 5, 1973, abandoned. This application June 17, 1976, Ser. No. 696,836
Claims priority, application Netherlands, Mar. 3, 1972, 7202809
Int. Cl.² A01B *33/06*
U.S. Cl. 172—59 **6 Claims**

1. A rotary harrow having a frame with a plurality of soil-working members journalled in a portion of said frame, said soil-working members comprising upwardly extending shafts rotatably mounted on said frame portion and said shafts being located side by side in a row that extends transverse to the normal direction of travel a single support extending substantially radially from the lower end of each shaft and the inner end of said support being attached to said shaft, soil-working tine means in a holder of said support and said support with tine means being located at only one side of the axis of rotation of said shaft, the distance between said tine means and the shaft of each corresponding soil-working member being greater than half the distance between two neighboring shafts and said members being positioned to work overlapping strips of soil, said shafts being in driving engagement with driving means that rotates adjacent shafts and their corresponding supports in relative opposite directions, pinions on said shafts being in driving engagement with one another and neighboring pinions

being in mesh, said soil-working members being arranged in two groups which rotate in relative opposite directions, the members of a first group being flanked at their opposite sides by members of a second group along said row and consecutive soil-working members of each group being out of phase by



multiples of about 90° from one another about their respective shafts, and when said harrow is viewed from the rear, the first leftmost support of the first group extending forwardly and about 180°, with respect to the first leftmost support of the second group.

4,058,169

AUTOMATICALLY SELF-STEERING PLOW/HARROW COMBINATION WITH RELEASE AND RESET MECHANISM CONNECTING HARROW TO PLOW

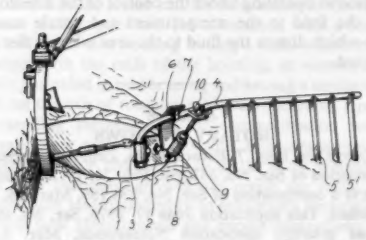
Lars-Eric Jacobsson, Galtungs Burs, Stanga, Sweden (S-620 13)

Filed Feb. 13, 1976, Ser. No. 658,110

Claims priority, application Sweden, Feb. 18, 1975, 7501816

Int. Cl.[2] A01B *49/02*

U.S. Cl. 172—191 **6 Claims**



1. A self-steering plow/harrow combination comprising: a plow blade; a longitudinally extending base structure; a number of harrow teeth attached to the base structure and spaced from each other and each directed downwardly towards the ground plane, the harrow teeth having a mainly rectangular cross section with the cross-sectional length axis inclined in relation to the direction of travel for the harrow teeth; the base structure being attached to the plow blade by pivot means restricting movement of said base structure to movement about a vertical pivot, whereby the base structure is movable in a horizontal plane substantially parallel to the ground plane, said base structure being attached to the plow blade in such a way, that the base structure together with the harrow teeth creates a force opposed to the friction force acting on the plow blade; a release mechanism attached to the plow blade and having means to engage the base structure, the engagement means releasing the base structure for movement in said horizontal plane at a predetermined load; and a reset means attached to the plow blade and the base structure to return the base structure to its original position when the predetermined load is no longer exceeded.

4,058,170

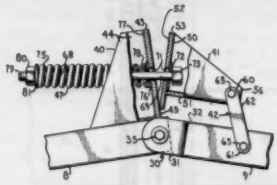
FARM IMPLEMENT HINGE RESTRICTOR

Thomas W. Ankenman, Tipton, and Lee J. Brinker, Glen Elder, both of Kans., assignors to Kent Manufacturing Co., Inc., Tipton, Kans.

Filed May 20, 1976, Ser. No. 688,136

Int. Cl.[2] A01B *15/14, 61/00*

U.S. Cl. 172—311 **11 Claims**



1. In a farm implement of the foldable tow type having at least two rigid frames positioned end-to-end and connected by a pivotal joint for relative swinging motion about an axis of rotation, a restrictor for preventing excessive oscillation between said frames, said restrictor comprising:

a. a fixed bracket attached to one of said frames and having a face disposed substantially normal to said one frame and positioned adjacent to said pivotal joint;

b. a reciprocating bracket having a face, said reciprocating bracket face engaging said fixed bracket face and extending therefrom in a direction toward the other frame;

c. linkage having a first end thereof pivotally attached to said reciprocating bracket in a spaced relation to the face thereof and having a second end thereof pivotally attached to said other frame in a longitudinally spaced relation with said pivotal joint; and

d. means spaced from said linkage and engaging said fixed bracket and said reciprocating bracket for resiliently urging said fixed and reciprocating bracket faces abuttingly together.

4,058,171

MOUNTING OF SOIL WORKING TINES

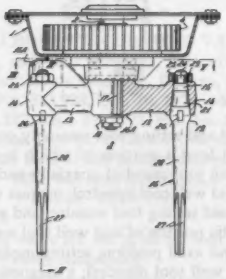
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Jan. 29, 1975, Ser. No. 545,006

Claims priority, application Netherlands, Jan. 31, 1974, 7401323; Feb. 8, 1974, 7401726

Int. Cl.[2] A01B *23/02, 33/06*

U.S. Cl. 172—713 **15 Claims**



1. A tine mounting for a rotary harrow comprising an elongated support having at least one tine holder adjacent an end thereof and a bore that receives a driving shaft, said tine holder having an internal, substantially vertical bore that receives a

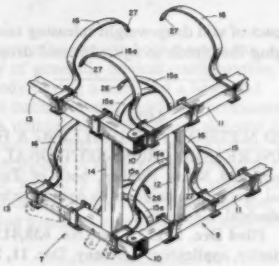
fastening portion of a tine, the longitudinal axis of said vertical bore extending substantially parallel to the longitudinal axis of said first mentioned bore, said tine holder having a forward side with respect to the normal direction of rotation of said mounting, said support and said tine holder being integrally formed from a single piece of metal by forging or casting, and including an integral thickened wall located at the forward side of the tine holder, said wall merging into an upwardly extending screen that projects above and forwardly from said holder, said wall also being thicker at its outer lateral side, in a region between the top and bottom of said holder, than it is adjacent said top and bottom.

4,058,172

TOOTH ARRANGEMENT IN REARWARDLY FOLDING CULTIVATORS

Calvin B. Blair, Barnard, and Kenneth A. Hake, Tipton, both of Kans., assignors to Kent Manufacturing Co., Inc., Tipton, Kans.

Filed Feb. 18, 1976, Ser. No. 659,017
Int. Cl.[2] A01B *65/02*
U.S. Cl. 172—311 **3 Claims**



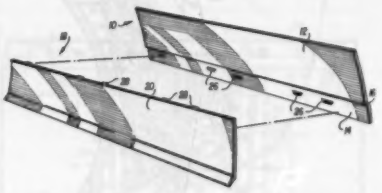
1. A cultivating implement comprising:
a. a main frame;
b. a rearwardly foldable wing frame attached to and extending laterally in respect to said main frame, said wing frame being rearwardly foldable from an operating configuration to a transporting configuration, said wing frame having a central wing section and outer wing sections on each side of said central wing section and a pivot joint between each of said outer wing sections and said central wing section, said central wing section and said outer wing sections each having a forward tool bar and a rearward tool bar;
c. a first and a second set of downwardly extending teeth on said forward tool bar and said rearward tool bar of each of said central wing section and said outer wing sections, the teeth of each of said sets having a convoluted connector section toward a proximal end thereof and an acutely angled distal end depending from an arcuate working section, the teeth of one of said sets of teeth having a substantially horizontal transition section between said arcuate working section and said connector section, the teeth of both of said sets having substantially the same straight length and equal deflection under load;
d. a tooth of said first set being located on each side of a tooth of said second set and spaced apart laterally from each other, said teeth of said first set having distal ends located forwardly of the distal ends of said teeth of said second set, said teeth distal ends of said first and second set projecting forwardly when said wing frame is in an operating configuration and projecting downwardly when said wing frame is in a transporting configuration, the distal ends of both sets of teeth being aligned with respect to a laterally extending line common to all of said wing sections, one of said first and second sets of teeth on each of said forward tool bar and said rearward tool bar of all of said wing sections being attached forwardly of the other of said first and second sets of teeth;
e. a tooth of the first of said sets on the central wing section being located adjacent to one side of each of said pivot joints and a tooth of the second of said sets being located on the other side of each of said pivot joints whereby a tooth of one of said sets overlaps a tooth of the other of said sets without entanglement when said wing frame is folded from said operating configuration to said transport configuration.

4,058,173

BLADE ASSEMBLY WITH REPLACEABLE CUTTING EDGE

Cyril W. Carson, 2155 Holly, Charlotte, Mich. 48813

Filed Mar. 18, 1976, Ser. No. 668,310
Int. Cl.[2] E02F *376*
U.S. Cl. 172—719 **5 Claims**



1. A blade assembly, comprising:
a moldboard having a rearwardly offset lower end;
a detachable blade having an upper portion engaging said offset lower end of said moldboard;
a plurality of lugs projecting rearwardly from the back face of said upper portion of said blade, each lug having parallel upper and lower surfaces and rearwardly diverging side surfaces;
said lower end of said moldboard having an equal plurality of openings for receiving said lugs, each opening having parallel upper and lower walls and side walls diverging rearwardly at the same angles as the side surfaces of said lugs, the separation between said upper and lower walls being slightly greater than the height of said lug, the separation of said side walls at the forward face of said lower end being slightly greater than the width of said lug at the rear face thereof;
an equal plurality of locking elements, each element having parallel top and bottom faces and parallel side faces which are parallel to one of the side surfaces of said lugs, the height of said element being nearly equal to the height of said opening and the width of said element being nearly equal to the difference between the maximum width of said opening and the maximum width of said lug; and
means to retain said locking element in said socket.

4,058,174

MOTOR GRADER WITH BLADE SUPPORT AND BEARING ASSEMBLY

Robert Allan Atherton, Chillicothe, and Carroll Richard Cole, Decatur, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

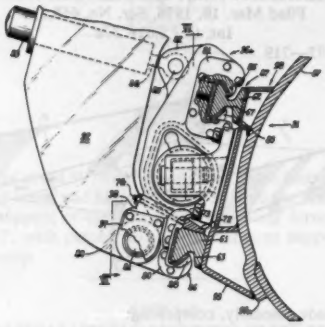
Filed June 14, 1976, Ser. No. 696,097
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—781 **11 Claims**

7. In a motor grader which has a circle with a pair of integral, depending blade support arms at its rearward portion, an improved support and bearing means for mounting a grader blade assembly on said arms for endwise movement, said improved means comprising, in combination:
two generally upright bearing housings each of which is

mounted on one of the support arms and forward of said arm;

aligned forwardly open lower jaws extending entirely across said housings, said lower jaws having generally planar upper surfaces, upright planar rear surfaces, and lower surfaces defining bottom surfaces and upstanding front flanges having upwardly and forwardly inclined inner faces;

aligned forwardly open upper jaws extending entirely across said housings, there being means in said upper jaws defining planar rear surfaces, substantially planar top and bottom surfaces, and upper and lower front webs having inner faces which are forwardly inclined toward their adjacent margins;



replaceable anti-friction wear strips lining the interiors of said lower jaws and of said means in said upper jaws;

substantially parallel upper and lower support rails on the rear of the blade assembly which extend through said means in said upper jaws and through said lower jaws and are slidable in said wear strips, said support rails being substantially concentric with the surfaces of the means in the upper jaws and with all but the top surfaces of the lower jaws;

means surmounting the top surface of the bottom rail to maintain a snug sliding fit between said rail and the wear strips;

and means for retaining the wear strips in the upper and lower jaws.

4,058,175

METHOD FOR OPERATING PILE DRIVER

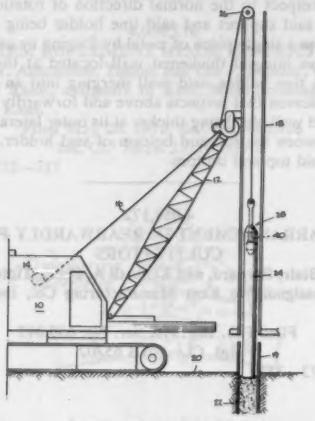
Henry A. Nelson Holland, Houston, Tex., assignor to Raymond International Inc., Houston, Tex.

Division of Ser. No. 507,613, Sept. 19, 1974, Pat. No. 4,002,211. This application July 6, 1976, Ser. No. 702,606

Int. Cl.² E02D *7/08*

U.S. Cl. 173—1 **5 Claims**

1. A method of forming a pile with a pile hammer rig including a crane having a hoisting drum, a clutch, driving means for said drum through said clutch, brake means for the drum, a drop-weight, a hoisting rope leading from said drum to said drop-weight, and means for selectively absorbing kinetic energy of the drum and rope interposed between the drum and the dropweight, said method comprising the steps of engaging said clutch to lift said drop-weight to a preselected height by winding the rope on the drum and thence releasing the clutch to let said drop-weight fall freely, thence braking said drum at a preselected time interval prior to impact of the drop-weight to actuate said means for absorbing kinetic energy, and subse-



quent to impact of said drop-weight releasing said brake means and reengaging the clutch to again lift said drop-weight.

4,058,176

TOOL AND METHOD FOR DRILLING A HOLE WITH AN INCREASED CROSS-SECTIONAL AREA

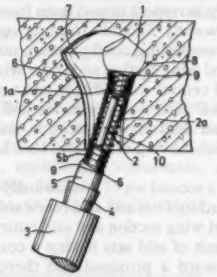
Artur Fischer, and Klaus Fischer, both of Tumlingen, Gde. Waldachtal, Germany, assignors to Artur Fischer, Tumlingen, Gde. Waldachtal, Germany

Filed Dec. 5, 1975, Ser. No. 638,413

Claims priority, application Germany, Dec. 11, 1974, 2458615; Mar. 8, 1975, 2510134

Int. Cl.² E21C *15/00*

U.S. Cl. 175—61 **16 Claims**



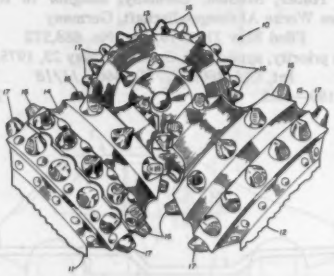
1. A drill for drilling a hole into an exposed surface of a workpiece such that the hole has an increased cross-sectional area in a region remote from the exposed surface, comprising in combination, a force-imparting unit; bit means for drilling such a hole and comprising a plurality of cutting edges; force-transmitting means comprisign a resiliently deflectable elongated and hollow force-transmitting structure having two ends angularly displaceable relative to each other, one end being directly connected to said bit means and the other end being connected to said force-imparting unit, for varying the orientation of said bit means relative to the force-imparting unit and further including a rod of rigid material within said force-transmitting structure, said rod having a cross-section smaller than the inner cross-sectional of said force-transmitting structure and arranged to transmit longitudinal force from said force-imparting unit to said bit means.

4,058,177

ASYMMETRIC GAGE INSERT FOR AN EARTH BORING APPARATUS

James W. Langford, Jr., Red Oak, and Wilbur S. Keller, Arlington, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 671,535, March 29, 1976, abandoned. This application Mar. 7, 1977, Ser. No. 775,226
Int. Cl.[2] E21B *9/10, 13/01*
U.S. Cl. 175—374 10 Claims



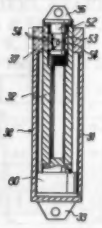
1. A rolling cutter for an earth boring apparatus, comprising:
a cutter body of generally conical configuration;
said cutter body having a nose and a base; and
a row of gage cutting inserts positioned proximate said base, said inserts comprising pressed and sintered granules of wear-resistant material together with a binder, said inserts having a mutiplicity of surfaces culminating in a crest with one surface having a plane section substantially larger than any plane sections on any other surface, said plane section facing generally away from said nose of said cutter body.

4,058,178

HYDRAULIC CYLINDER UNIT

Shinitsu Shinohara, Takamatsu; Hisanori Uchino, Tokyo, and Hiroyuki Yamaji, Kagawa, all of Japan, assignors to Tadano Ironworks Co., Ltd., Takamatsu, Japan

Continuation-in-part of Ser. No. 500,291, Aug. 26, 1974, abandoned, which is a division of Ser. No. 266,355, June 26, 1972. This application Jan. 19, 1976, Ser. No. 650,290
Claims priority, application Japan, Sept. 13, 1971, 46-83664
Int. Cl.[2] F01B *25/26, 31/12*
U.S. Cl. 177—146 6 Claims



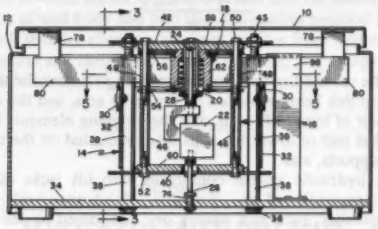
1. In a hydraulic cylinder unit comprising:
a. a cylinder means pivotally connected to a base;
b. a piston axially slidably inserted in the cylinder means in a fluid-tight manner between a retracted position and a fully extended position, said piston being extended by hydraulic pressure supplied to said cylinder means; and
c. a rigid piston rod means connected to the piston at base end thereof and projected outwardly from the cylinder means, the piston rod means being connected to a load which is to be carried by the cylinder unit, load-detecting means for detecting load applied to the cylinder unit in the axial direction of the cylinder unit which means is arranged within a hollow space provided in said rigid piston rod means and is mounted on one of the components of said piston rod means which component is strained by a load carried by the cylinder unit as the piston moves between the retracted and fully extended positions, the load-detecting means including at least one gauge for detecting strain of said component, the load-detecting means providing an electrical output signal corresponding to the load in response to strain detected by the gauge.

4,058,179

LOAD CELL SCALE

Robert John Price, El Cajon, Calif., assignor to Orbitran Company, Inc., Lakeside, Calif.

Filed June 16, 1976, Ser. No. 696,565
Int. Cl.[2] G01G *23/02, 21/10*
U.S. Cl. 177—156 15 Claims



1. A load cell scale incorporating a platform mounted for vertical movement limited by an overload limit stop, the platform adapted for the reception of an object to be weighed, and a load cell for converting force into a change in an electrical characteristic comprising:
a fixed frame,
an interconnection member connected for movement with a load on the platform,
a load transfer frame connected to a load cell and mounted on said fixed frame for limited translation relative to said fixed frame,
spring means connected between said interconnection member and said load transfer frame for maintaining said interconnection member and said load transfer frame in a load transfer relationship until a predetermined load is exceeded, and for load in excess of said predetermined load said interconnection member decoupling from said load transfer frame and deforming said spring means until said platform contacts overload limit stops.

4,058,180

ATTACHING DEVICE FOR MOUNTING OF A BROADCAST FERTILIZER SPREADER ON A TRACTOR

Heinz Dreyer, Gaste, Germany, assignor to Amazonen-Werke H. Dreyer, Hasbergen-Gaste, Germany

Filed July 27, 1976, Ser. No. 709,056
Claims priority, application Germany, July 29, 1975, 2533814
Int. Cl.[2] A01C *19/00;* B62D *49/02*
U.S. Cl. 180—14 R 10 Claims

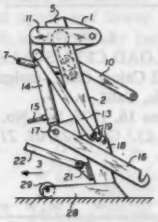
1. In an attaching device for a broadcast fertilizer spreader for mounting of the spreader on a tractor having a three point power lift comprising:
a. a frame,
b. a first top link and a coupling element for the first top link pivotally coupling the first top link to the frame, and a first pair of lower lift arms and coupling elements for the first pair of lower lift arms pivotally coupling the first pair of lower lift arms to the frame, both the first top link and the first pair of lower lift arms being for the tractor three point

power lift and for actuation to raise and lower the frame by a hydraulic system of the three point power lift,

c. a second top link pivotally mounted on the frame and a second pair of lower lift arms pivotally mounted on the frame, for attachment of the device to the spreader,

the improvement which comprises:

d. the frame comprising two upright supports disposed transversely of the advancement direction of the fertilizer spreader and a cross arm joining upper portions of the upright supports together,



e. the second top link and the coupling element for the first top link being mounted on the cross arm, and the second pair of lower lift arms, and the coupling elements for the first pair of lower lift arms being mounted on the upright supports, and

f. a hydraulic system comprising two lift jacks disposed transversely of the direction of advancement of the spreader, each jack having one end joined to one of the upright supports and the other end to the lower lift arm of the second pair of lower lift arms which is coupled to said one upright support.

4,058,181

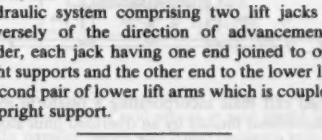
MOTORCYCLE SUSPENSION SYSTEMS

Erik F. Buell, Box 418, R.D. No. 2, Gisbonia, Pa. 15044

Filed Mar. 16, 1976, Ser. No. 667,391

Int. Cl.[2] B62K *25/02*

U.S. Cl. 180—32 **5 Claims**



1. In a motorcycle frame having a generally closed configuration having generally horizontal upper and lower frame members and spaced generally front and rear vertical members transverse to and connecting said upper and lower members to form the closed configuration, a power unit in said frame, having a drive sprocket, the improvement comprising a pair of spaced generally horizontally extending swing arms on each side of said frame and rear wheel extending rearwardly from the rear member and each pivoted adjacent one end on said frame, a generally vertical link connecting the other ends of said swing arms and adapted to receive an axle shaft of the rear wheel intermediate the two swing arms, link means connected at one end to one arm of one of said pairs of swing arms, spring means pivotally connected at one end to one of a swing arm of the other pair of swing arms and the frame and at the other end to said link means at its other end said link meas being relatively proportioned to the spring means connection at said one end so that deflection of said swing arms from a first normal position upwardly around their pivot at the frame causes a progressively rising rate of deflection of said spring means, while maintaining both a substantially constant contact patch between the rear wheel and a surface being travelled and a substantially constant wheel base.

4,058,182

ELECTRICALLY DRIVEN VEHICLE, ESPECIALLY PASSENGER MOTOR VEHICLE

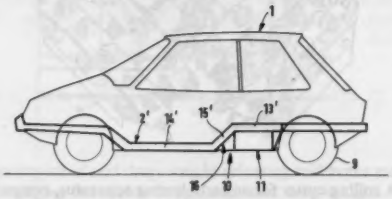
Manfred Huber, Munich, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Germany

Filed May 21, 1976, Ser. No. 688,572

Claims priority, application Germany, May 23, 1975, 2522844

Int. Cl.[2] B60R *21/00;* **B60L** *11/18*

U.S. Cl. 180—68.5 **23 Claims**



1. An electrically driven vehicle with a vehicle floor comprising electric power source means taken along in the vehicle, said electric power source means being arranged within the area of the vehicle floor and depending therefrom by way of mounting support means, characterized in that the mounting support means include a further means which, in case of a vehicle impact of predetermined strength, disconnects the support means and the power source means to effect a detachment of the electric power source means from the vehicle.

4,058,183

STRADDLE CARRIER

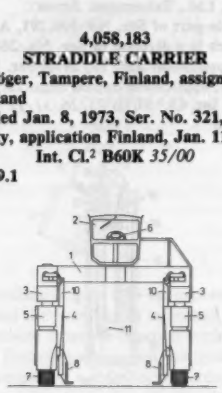
Keijo Kalevi Kröger, Tampere, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Jan. 8, 1973, Ser. No. 321,736

Claims priority, application Finland, Jan. 11, 1972, 61/72

Int. Cl.[2] B60K *35/00*

U.S. Cl. 180—89.1 **3 Claims**

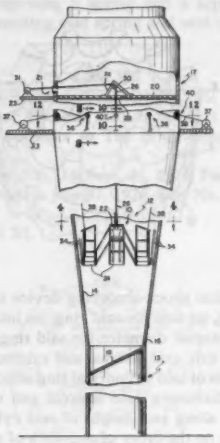


1. A straddle carrier comprising two spaced upper side bodies, the space between said bodies being used for the loads to be transported, a single transverse beam interconnecting said bodies and extending between opposed middle side portions of said bodies, a driver's cab carried by said beam, wheels and means connecting said wheels with said side bodies, said transverse beam being a box-type beam dimensioned to operate as a torsion spring, whereby simultaneous contact of all wheels with an uneven driving surface is achieved.

4,058,184
SCAFFOLD

Alistair J. Stuart, and James B. Burch, both of Indianapolis, Ind., assignors to Hugh J. Baker & Company, Indianapolis, Ind.

Filed Apr. 15, 1976, Ser. No. 677,481
Int. Cl.[2] E04G 3/10
U.S. Cl. 182—128 36 Claims

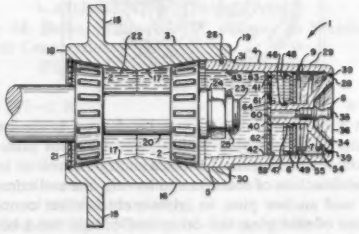


1. A hanging scaffold comprising a self-contained central frame having upper and lower frame members; a plurality of support arms pivotally connected to one of said frame members and extending radially outwardly therefrom; a plurality of platforms connected to said support arms opposite said frame; first adjustment means for selectively raising and lowering said upper and lower frame members with respect to each other, said first adjustment means having means interconnecting the other of said frame members with said support arms so as to cause inward and outward movement of said arms in response to relative movement of said frame members to adjust the radial distance of said platforms from said frame; support means for elevationally suspending said frame, support arms and platforms from above; and second adjustment means connected to said support means for selectively adjusting the elevation of said frame, support arms, and platforms.

4,058,185
AUTOMATIC WHEEL BEARING LUBRICATOR

Kenneth C. Ploeger, 5th & Dryden, Odessa, Mo. 64076

Filed Aug. 9, 1976, Ser. No. 712,930
Int. Cl.[2] F16N 11/04; B60B 27/00
U.S. Cl. 184—1 D 10 Claims



1. A wheel bearing lubricator comprising:

a. a hollow body having side walls, a central aperture, a first end, a medial portion, and a second end; said first end being adapted for sealing engagement with a wheel hub; said second end having a substantially cylindrically shaped interior surface, and said medial portion having an relatively enlarged interior surface;

b. a piston slidably mounted within said second end; said piston having a marginal edge thereof normally sealingly engaging the interior surface of said second end; said piston being slidably mounted in said body for translation into said medial portion wherein the marginal edge of said piston assumes a non-sealing position with respect to the interior surface of said medial portion;

c. a relief opening positioned through said body and disposed rearwardly of said piston and in spaced relation thereto;

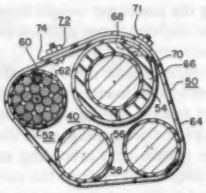
d. resilient means urging said piston toward said medial portion; and

e. means normally limiting piston travel to translation within the second end of said body; said limiting means being heat responsive whereby upon attaining a predetermined temperature, said limiting means releases said piston, and said resilient means urges said piston into the medial portion of said body and into said non-sealing position therewith thereby allowing lubricant to flow from said medial portion and through said relief opening, and escape from the lubricator as a warning signal.

4,058,186
ELEVATOR SYSTEM WITH RETAINER DEVICE FOR PLURALITY OF TRAVELING CABLES

Clyde M. Mullis, Glen Rock, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 28, 1976, Ser. No. 691,176
Int. Cl.[2] B66B 7/06
U.S. Cl. 187—1 R 4 Claims



4. An elevator system, comprising:

a building having a hoistway,

an elevator car mounted for vertical movement in the hoistway of said building,

a plurality of flexible traveling cables connected between said elevator car and a predetermined point of the hoistway,

said plurality of traveling cables being suspended from said elevator car such that each hangs in the hoistway with a bight which moves with car movement,

and a plurality of retainer devices disposed about said traveling cables at predetermined spaced locations,

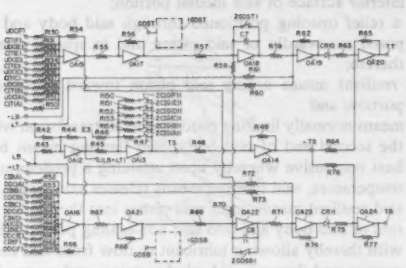
each of said retainer devices including an elastomeric member, a strap member, and fastening means, said elastomeric member encircling one of said traveling cables, with said strap member tightly encircling the elastomeric member and its associated traveling cable, said strap member loosely encircling all of the traveling cables in a non-stretched condition to provide a loose containment thereof, said fastening means maintaining the assembled relation of said elastomeric member and the strap member about said plurality of traveling cables.

4,058,187

LIMITED STOP ELEVATOR DISPATCHING SYSTEM

Herbert Jacoby, Spring Valley, and Arnold Mendelsohn, New City, both of N.Y., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sept. 4, 1975, Ser. No. 610,510
Int. Cl.[2] B66B *1/18*
U.S. Cl. 187—29 R 8 Claims



1. Apparatus for generating dispatching signals for use with an elevator control system which selects and dispatches each of a plurality of cars from each of two terminals at dispatching intervals, said apparatus comprising:

weight responsive means individual to each car, each being responsive to the weight of the passengers in its respective car producing a signal representing that weight;

accumulation means for each terminal receiving said passenger weight signals, each said accumulation means operating in response to said passenger weight signals generating signals representing an estimated loading for the next car to be dispatched from its respective terminal;

signal transmission means for each said accumulation means transmitting the passenger weight signals of each selected car upon its dispatch from each of said terminals to the associated accumulation means;

a computed separation time period generating means responsive to the estimated loading signals of each said accumulation means and generating signals representing the computed time period separating each dispatched car of the system from the car next preceding and the car next succeeding its dispatch if each of the cars is sharing equally the estimated loading at the two terminals;

car differential means associated with one of said terminals producing signals signifying a differential between the cars that are approaching and are located at said one terminal and those that are approaching and are located at the other terminal during each dispatching interval that elapses for said one terminal;

loading differential means associated with said one terminal responsive to the estimated loading signals of each said accumulation means and generating signals signifying a differential between the signals representing the estimated load at said other terminal and the estimated load at said one terminal during each dispatching interval that elapses for said one terminal;

dispatching interval generating means responsive to said computed separation time period signal and to said car and loading differential signals and generating a dispatching interval for each selected car at said one terminal;

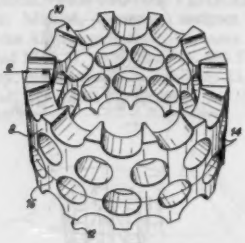
and a dispatching signal generator responsive to said dispatching interval generating means generating dispatching signals for each selected car at said one terminal upon an elapse from the disptach of the next preceding car of the time period represented by said dispatching interval for said selected car.

4,058,188

MECHANICAL SHOCK-ABSORBING DEVICE

Bernard Vrillon, Wissous, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 28, 1974, Ser. No. 446,824
Claims priority, application France, Mar. 6, 1973, 73.07934
Int. Cl.[2] F16F *7/12*
U.S. Cl. 188—1 C 6 Claims



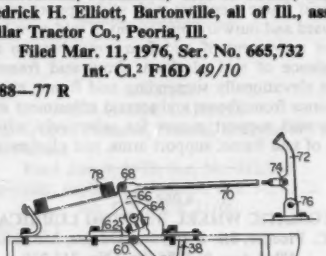
1. A mechanical shock-absorbing device comprising a metal cylindrical ring, an axis for said ring, an internal diameter for said ring, an external diameter for said ring, a height for said ring along said axis, said internal and external diameters defining the thickness of said cylindrical ring which is the difference between said diameters, said internal and external diameters being constant along said height of said cylindrical ring, said thickness being on the order of one-sixth of said external diameter and a plurality of circular orifices in and over the surface of said cylindrical ring, said circular orifices being so disposed in circles on said ring that there is the same cross-section of metal along each generator line of said cylindrical ring.

4,058,189

CONTROL LINKAGE FOR A BAND TYPE BRAKE

Monte Chamberlain, Metamora; Glen S. Comer, Jr., Dunlap, and Fredrick H. Elliott, Bartonville, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 11, 1976, Ser. No. 665,732
Int. Cl.[2] F16D *49/10*
U.S. Cl. 188—77 R 1 Claim



1. In a control linkage for a band type brake having an acutating lever provided with a pair of anchor pins, a brake band adapted to be trained about a rotary element to be braked in either direction of rotation and having one end connected to one of said anchor pins, an adjustment bracket connected to the other of said pins, the other end of said band being connected to said adjustment bracket, an anchor bracket having a pair of spaced slots loosely receiving said pins and means for biasing one of said pins towards an end of the slot in which it is received, the improvement comprising additional means resiliently biasing the other pin into engagement with the end

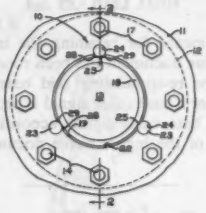
of its associated slot and oppositely of said one pin; one of said slots opening generally upwardly and having a lower end and the other of said slots opening generally downwardly and having an upper end, said one pin being received in said upwardly opening slot and said other pin being received in said downwardly open slot, said biasing means biasing said one pin toward said lower end and said additional means biasing said other pin toward said upper end, said additional means applying a predominantly vertical force to said other pin; said additional means comprising a spring and a separate, bent link directly interconnecting said spring and said other pin.

4,058,190

BRAKE DISC MOUNTING

Richard H. Gardner, Pleasant Hill, and Robert D. Kelley, Troy, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 506,714, Sept. 17, 1974, Pat. No. 3,978,945.
This application June 1, 1976, Ser. No. 691,597
Int. Cl.² F16D *65/12*
U.S. Cl. 188—218 XL **9 Claims**



1. A mounting for a brake disc on a shaft having an annular pilot rib with a circumferentially continuous cylindrical surface for registering said disc and said brake disc being fastened to said shaft for substantially no relative movement circumferentially and limited relative movement radially of said shaft, said mounting comprising a spacer member interposed between said pilot rib and said disc, said spacer member having a width measured in the axial direction of said shaft at least as great as the thickness measured in the radial direction of said shaft, said disc having an inner peripheral surface spaced from said cylindrical surface of said pilot rib and said spacer member being of a softer material than the material of said disc and disposed in a position between and in engagement with said pilot rib and said inner peripheral surface to limit relative radial movement and provide an opening between said disc and said shaft for deformation of a portion of said spacer member upon shrinkage of said disc on said pilot rib.

4,058,191

ELEVATOR SYSTEM INCLUDING AN ELEVATOR CAR HAVING DOOR OPERATED SEALING DEVICES ADJACENT DOOR OPENING

Anthony M. Balbo, Millburn, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 6, 1976, Ser. No. 729,919
Int. Cl.² B66B *11/00*
U.S. Cl. 187—1 R **8 Claims**

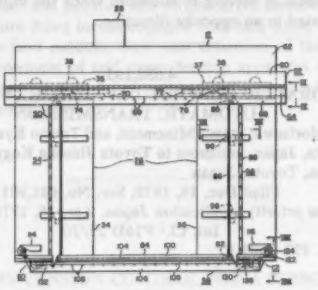
1. An elevator system, comprising:

an elevator car including an opening having first and second sides and top and bottom portions, and door means mounted on said elevator car for horizontal movement to open and close said opening;

a building having a plurality of floors, and door means located at certain of the floors to provide access to the floors through an external wall of the building;

means mounting said elevator car for movement adjacent to but spaced from said external wall, with the door means of a floor being in registry with and operable by the door means of the elevator car when the elevator car is stopped at the floor;

and sealing means carried by said elevator car, said sealing means including first means mechanically and pivotably actuatable between first and second positions by horizontal movement of the door means of said elevator car as it



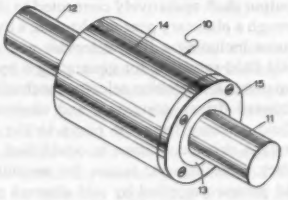
opens and closes the opening in said elevator car, with the first position being a retracted position, and with the second position being an extended position which closes and seals the space above the top portion of the car opening, between the elevator car and the external wall of the building.

4,058,192

UNI-DIRECTIONAL MECHANISM

Robert Haigh, Northboro, Mass., assignor to Lowell Corporation, Worcester, Mass.

Filed May 21, 1976, Ser. No. 688,690
Int. Cl.² F16D *41/18*
U.S. Cl. 192—46 **4 Claims**



1. A uni-directional mechanism, comprising:

a. a rotatable input element in the form of a wheel with a generally cylindrical periphery,

b. a rotatable output element in the form of a housing having a cylindrical bore whose surface lies adjacent to the periphery of the wheel,

c. a dog mounted in the output element, the dog mounted in a generally radial recess in the housing, the inner end of the dog is semi-cylindrical, the recess having two parallel spaced sides between which the dog is slidably mounted, one of the said sides of the recess is joined to the surface of the cylindrical bore by a plane surface which is inclined at a substantial angle to the radial,

d. notches formed on the input element, each notch consisting of two plane surfaces lying symmetrically to a radius and meeting at an angle of about 90°, the wheel being provided with a substantial land between successive pairs of notches and the dog being provided with a broad surface that slides on successive lands and is large enough to bridge each notch, and

e. a coil spring for biasing the dog toward the said input element, the coil spring being located in the recess and compressed between the inner end of the recess and the

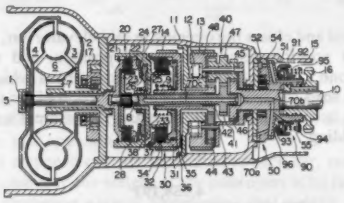
inner end of the dog, the dog being movable automatically from a first aspect where it does not engage a surface of a notch when the input element is rotated in one direction to a second aspect where a portion of said semi-cylindrical inner end of the dog engages one of the spaced sides of the recess and a surface of the dog engages the inclined surface of the recess so that the dog does engage a surface of a notch in driving relationship when the input element is rotated in an opposite direction.

4,058,193

HYDRAULIC CONTROL DEVICE FOR USE IN AN AUTOMATIC TRANSMISSION

Kunio Morisawa; Isamu Minemoto, and Tatsuo Kyushima, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 18, 1975, Ser. No. 641,901
Claims priority, application Japan, Apr. 16, 1975, 50-45160
Int. Cl.[2] F16D *25/10*
U.S. Cl. 192—109 F **5 Claims**



1. In hydraulic control device for automatic transmissions of the type having an output shaft, an intermediate shaft coupled to the input shaft through a hydraulically actuated frictional engagement device during a forward drive condition, servo means for hydraulically actuating the frictional engagement device, an output shaft operatively connected to the intermediate shaft through a planetary gear mechanism, a hydraulic fluid pressure source including a fluid reservoir and a pump connected to said fluid reservoir for generating a hydraulic fluid pressure, a manual shift position selector mechanism for establishing a forward driven condition, and channel means for supplying fluid pressure from the pump to the servo means when a forward drive condition is established by the shift position selector mechanism, means for modulating the increased fluid pressure supplied by said channel means to said servo means upon actuation of said frictional engagement device for minimizing shock as said intermediate shaft is coupled to said input shaft during shift into a forward drive condition comprising a first passage formed in said intermediate shaft and connected to said servo means, a second passage formed in said output shaft and connected to said first passage, and a third passage connecting said second passage to said pump and said fluid reservoir forming the channel means, and accumulator means fixedly positioned co-axially around said output shaft and fluidly connected to said third passage for providing a fast modulation of the pressure of the fluid supplied by said channel means and for minimizing the size of said hydraulic device.

4,058,194

MULTIPLE DOCUMENT RECOGNITION APPARATUS

John B. Riddle, Los Altos Hills, and Howard Z. Bogert, Jr., Cupertino, both of Calif., assignors to Micro Magnetic Industries, Inc., Palo Alto, Calif.

Filed May 4, 1976, Ser. No. 682,925
Int. Cl.[2] G07F *7/04*
U.S. Cl. 194—4 C **5 Claims**

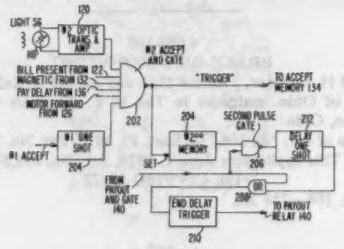
1. A multi-document recognition device comprising:

a. means for recognizing documents having a base level of value;

b. means responsive to said recognizing means for providing a signal indicating that such a base value has been recognized; and

c. means for recognizing documents having higher levels of value than said base level including:

i. means for stimulating said base value indicating means to provide a signal indicative of the base value;



ii. memory means for retaining the information that a higher value document has been recognized, and

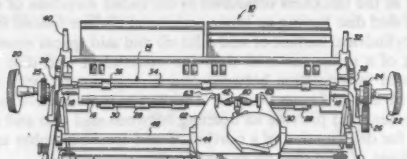
iii. means for re-stimulating said base value indicating means, after a base value signal is provided, to provide additional base value signals according to the ratio of the value of the higher value document and the base value.

4,058,195

INCREMENT-DECREMENT LOGIC FOR SERIAL PRINTER

John C. Fravel; Louis H. Chang, and Harunori Yoshikawa, all of San Jose, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 3, 1976, Ser. No. 682,881
Int. Cl.[2] B41J *1/24, 7/48*
U.S. Cl. 197—18 **14 Claims**



1. A serial printer comprising:

a carriage;

a print member rotatably mounted to said carriage and including a plurality of character elements;

drive means coupled to said print member for rotating said print member to a desired rotational position;

means coupled to said print member for generating a plurality of periodic position signals each indicative of the rotational movement of said print member;

means for storing a count indicative of the actual rotational position of said print member, said means for storing including means responsive to an increment pulse for incrementing said count by one and means responsive to a decrement count for decrementing said count by one;

increment-decrement means coupled to said means for generating and responsive to said position signals for generat-

ing an increment pulse at a predetermined point during the period of a predetermined one of said position signals during rotation of said print member in one direction and a decrement pulse at said predetermined point during rotation of said print member in the opposite direction, said increment-decrement means including means for inhibiting the generation of a predetermined increment pulse that would normally occur when the print member has been rotated too far and overshoots said desired rotational position by a predetermined amount and then is returned to said desired rotational position; and

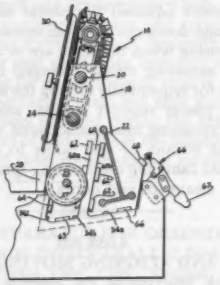
means responsive to said count and to a signal representative of said desired rotational position of said print member for controlling the direction and speed of rotation of said print member.

4,058,196

PRINTER WITH INTERCHANGEABLE PAPER-FEED MODULES

William D. Rempel, Howell, Mich., assignor to Sycor, Inc., Ann Arbor, Mich.

Filed Feb. 23, 1976, Ser. No. 660,257
Int. Cl.[2] B41J *15/04*
U.S. Cl. 197—133 R **27 Claims**



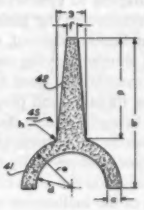
1. A data printer with removable modular paper-feed assembly, comprising: a main support frame structure for the printer; print head means movable relative to at least portions of said frame structure so as to print lines of characters on paper fed by said paper-feed assembly; means carried on said frame structure defining an elongated guideway having longitudinal guide surfaces and means defining limiting and positioning surfaces for a module guided by said guide surfaces; drive means carried by said frame structure, including a motor and a rotatable output drive member; at least one modular paper-feed assembly having side wall sections, at least one support extending between the side wall sections, and movable paper-engaging-and-feeding apparatus mounted between the side wall sections, said feeding apparatus including a continuously movable member having means for engaging and moving paper stock and a rotational drive element coupled to such member for imparting movement thereto; means for releasably and detachably mounting said modular paper-feed assembly upon said frame structure, said means including a follower structure for said elongated guideway, said follower structure carried with said paper-feed assembly and being complementary to and movable longitudinally along said frame structure guide surfaces, said mounting means also having portions cooperatively seatable against said limiting and positioning surfaces to index the paper-feed assembly in a particularly defined position upon the frame structure said guideway and guideway follower being disposed and positioned to define a path of movement for said paper-feed assembly which brings the drive element of the latter angularly toward and into driving engagement with the output drive member of the drive means motor carried by the frame structure when the said limiting and positioning surfaces have indexed the paper-feed assembly in said particularly defined position; and interlock means having a locking element carried on one of said frame structure and said paper-feed assembly and a locking element-engaging portion carried on the other thereof for mutual locking engagement between said paper-feed assembly and said frame structure in said seated, indexed position, said locking engagement rigidly securing said paper-feed assembly in place upon the frame structure and holding said output drive member of the frame structure drive means engaged with said drive element of the paper-feed module, such that actuation of the motor produces movement of said paper-feeding apparatus through the interengaged output drive member and paper-feed assembly drive element.

4,058,197

RIBBON TENSION CONTROL FOR A RIBBON CARTRIDGE

Donald P. West, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 537,148, Dec. 30, 1974, abandoned.
This application Sept. 27, 1976, Ser. No. 727,107
Int. Cl.[2] B41J *33/52*
U.S. Cl. 197—151 **9 Claims**



1. In a serial printer having a platen, a laterally movable carrier for traversing a printing line, printhead means supported on said carrier for impacting with said platen to print characters, ribbon feed means supported on said carrier for feeding an ink ribbon past said printhead means, and a ribbon cartridge supported on said carrier, wherein said ribbon cartridge includes means for rotatably supporting a ribbon supply spool, means for rotatably supporting a ribbon take-up spool and means for transferring said ribbon between said supply spool and said take-up spool; the improved ribbon tension control comprising:

a stationary frictional drag means extending radially across and positioned in frictional engagement with all the edges of at least one side of the ribbon positioned on the supply spool, said frictional drag means being of a shape to effect a substantially uniform tension in said ribbon during its transfer, said shape comprising a generally curved section which is coaxial with the ribbon supply spool and a straight-line tapered section extending radially outwardly from the generally curved section and extending approximately to the periphery of the ribbon material on the supply spool, the generally curved section having a width in the radial direction of about 0.16 times the width in the radial direction of the tapered section and said tapered section having a width in the circumferential direction of the spool which decreases by a factor of about 0.5 from its inner extremity to its outer extremity, said generally curved section is positioned against said spool to provide a predetermined area of contact between said spool and said generally curved section regardless of the amount of ribbon remaining on said spool.

4,058,198

CONVEYOR ASSEMBLY

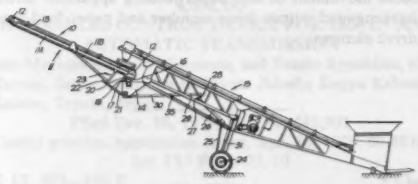
Patrick O'Neill; Patrick Joseph Douglas, and Michael Lee Mallaghan, all of Dungannon, Ireland, assignors to Powerscreen International Limited, Dungannon, Ireland

Filed Mar. 30, 1976, Ser. No. 672,078

Claims priority, application United Kingdom, Apr. 1, 1975, 13176/75

Int. Cl.² B65G *21/12*

U.S. Cl. 198—313 3 Claims



1. A conveyor assembly comprising a main conveyor, a boom conveyor unit comprising an elongate support structure and a conveyor mounted in said support structure, a mounting pivotally connected at the discharge end of said main conveyor for movement about a transverse axis relative to said main conveyor, a rotatable support on said mounting to which said boom conveyor unit is mounted for movement in a lateral plane, and a linkage adapted to synchronously alter the position of the mounting relative to the main conveyor on alteration of the angle of inclination thereof, said linkage comprising an upright support member having one end connected to a part of the main conveyor which does not vary in height off the ground, and having its other end pivotally connected to a first link, said first link being angularly disposed relative to said upright support member in a direction towards the discharge end of the main conveyor, and pivotally connected at its other (forward) end to a location on the main conveyor which varies in height on alteration of the inclination of the main conveyor, a bell crank arm mounted on said location of variable height and having a fixed position relative to the first link, and a connecting rod pivotally connected to the bell crank in the mounting.

4,058,199

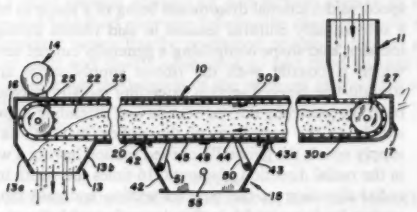
IN-MASS CONVEYOR WITH INTERMEDIATE DISCHARGE

William A. Schlagel, Coon Rapids, Minn., assignor to Schlagel, Inc., Cambridge, Minn.

Filed Aug. 4, 1976, Ser. No. 711,438

Int. Cl.² B65G *19/08*

U.S. Cl. 198—370 5 Claims



1. A conveyor for conveying material in-mass and including at least one intermediate discharge along the length thereof, said conveyor including:

a. a longitudinally extending housing having a receiving end and a discharge end, said housing including a substantially planar, material support section, upstanding side sections and a top;

b. a continuous, material conveying element arranged within said housing and providing an upper and a lower run portion, said lower run portion being arranged in close association to said housing material support section for travel thereover;

c. means arranged on the respective ends of said housing and carrying said material conveying element;

d. means driving one of said carrying means to impart motion to said material conveying element;

e. said material conveying element including a generally centrally arranged connecting member and a plurality of laterally extending, upstanding material engaging elements;

f. at least one intermediate discharge arranged between said ends of said housing and extending directly downwardly therefrom, said intermediate discharge including a downwardly extending housing having sides engaging said planar, material support section and having a door structure in planar alignment with said planar support section, said door structure forming said planar support section within said housing;

g. said door structure including a pair of door members each being rotatably mounted on transversely extending pivot means, said pivot means being arranged on the ends of said door members adjacent the planar support section, the length of said doors providing an opening the entire width of said housing when the same are in open position; and,

h. common actuating means arranged in association with said doors for sequentially closing the same into alignment with said planar support section, said actuating means including camming means associated with and operating against the bottom of said doors to shift the same upwardly, said camming means being spaced from said pivot mounting means for said doors.

4,058,200

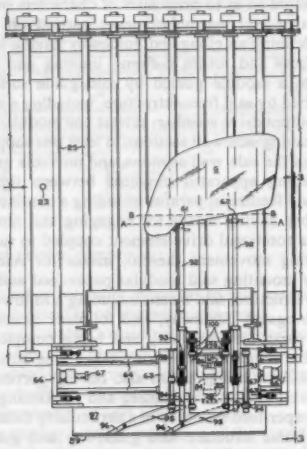
ORIENTING AND ALIGNING MOVING GLASS SHEETS

Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 23, 1975, Ser. No. 598,298

Int. Cl.² B65G *47/24*

U.S. Cl. 198—382 12 Claims



1. Apparatus for individually orienting and aligning each sheet of a series of thin, rigid, glass sheets moving rapidly in a given plane in an essentially straight path along a conveyor toward a sheet treating station where it is desired to have said sheet properly oriented and aligned relative to said sheet treat-

ing station, a sheet orienting and alignment station located to one side only of said conveyor and comprising:

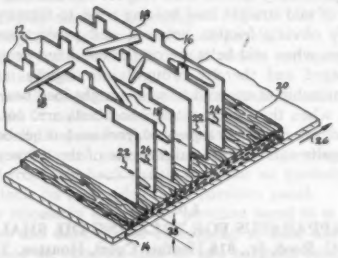
1. a carriage provided with a pair of sheet edge engaging members in the form of truncated cones whose outer walls are shaped upward and inward relative to the conical axes of said sheet edge egaging members, said carriage being mounted for movement in a reciprocating path parallel to and to one side of said essentially straight path,
2. means to move said carriage downstream in unison with movement of each sheet in said series between an upstream position and a downstream position at a speed of movement of said sheet and to return said carriage to said upstream position at a more rapid speed,
3. means to move said sheet edge engaging members laterally inward in a direction substantially normal to said conical axes to predetermined lines of engagement with the side of said sheet adjacent said glass edge engaging members in the plane occupied by said sheet during its movement as said carriage moves downstream, said glass engaging members causing less edge chipping and surface marking of the glass than that which results from orienting and aligning moving glass sheets with glass engaging members of cylindrical configuration,
4. means to retract said sheet edge engaging members from said predetermined lines of sheet edge engagement and means to lift said sheet edge engaging members above the plane occupied by said sheets after said sheet edge engaging members reach said predetermined lines of sheet edge engagement to avoid misaligning said previously aligned sheet by avoiding further contact therewith, and
5. means to lower said sheet edge engaging members into said plane in time for said carriage to receive the next rigid sheet at said upstream position and after the trailing edge of a previous sheet engaged during the previous downstream movement of said carriage has passed the positions occupied by said sheet edge engaging members.

4,058,201

METHOD AND APPARATUS FOR ORIENTING WOOD STRANDS INTO PARALLELISM

Roland Etzold, Mountain View, Calif., assignor to Elmendorf Research, Inc., Palo Alto, Calif.

Filed Dec. 20, 1974, Ser. No. 535,079
Int. Cl.² B65G *47/34*
U.S. Cl. 198—382 **18 Claims**



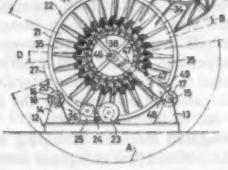
1. A method of orienting wood strands into parallelism on a moving support to form a mat thereon comprising: providing a group of elongated, generally parallel spaces above the support with each pair of adjacent spaces having a movable boundary therebetween and extending to a predetermined depth and with each boundary having a plurality of spaced projections on the upper margin thereof; directing a mass of loose wood strands toward said group of spaces from above the same so that the strands aligned with the longitudinal axes of the spaces will gravitate therethrough and onto said support; moving each pair of adjacent boundaries in opposite directions relative to each other along respective, generally straight paths to cause corresponding projections to engage those strands which span the distance between the boundaries and to turn such strands into alignment with respective spaces, the speed of movement of the boundaries relative to speed of movement of the support being sufficient to cause upended strands having first ends engaging the strand mat therebelow and second ends engaging adjacent boundaries to be turned into substantial alignment with the longitudinal axes of respective spaces before the movement of the support can cause disorientation of the strands.

4,058,202

APPARATUS FOR PROCESSING PRODUCTS ESPECIALLY PRINTED PRODUCTS

Walter Reist, Hinwil; Egon Hänsch, and Reinhard Gösslinghoff, both of Wetzikon, all of Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Filed Feb. 5, 1976, Ser. No. 655,562
Claims priority, application Switzerland, Feb. 26, 1975, 2430/75
Int. Cl.² B65G *29/00*
U.S. Cl. 198—482 **38 Claims**



1. An apparatus for processing products, especially printed products comprising:

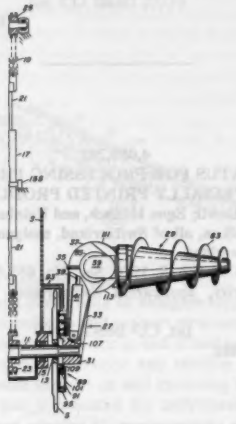
a. a revolving cell wheel having an axis of rotation and means providing compartments for the cell wheel;
b. means mounting said cell wheel for rotation about said axis of rotation;
c. means for rotating said cell wheel about said axis of rotation;
d. means defining an infeed location for the delivery of products into the compartments of said cell wheel where the products are processed while residing in said compartments;
e. means defining an outfeed location for the removal of the products from said compartments of said cell wheel;
f. said infeed location and said outfeed location being arranged in offset relationship in the direction of the axis of rotation of said cell wheel;
g. a plurality of product entrainment means arranged in each compartment for axial movement through a work stroke and a return stroke, the axial length of said work stroke being only a fraction of the axial length of said cell wheel;
h. means individual to each compartment for operatively coupling the plurality of entrainment means of the respective compartment with one another; and
i. drive means for driving said entrainment means, said drive means comprising a common stationary guide track describing a closed curve and follower elements coacting with said stationary guide and rotating with said cell wheel to cause said axial movement of said plurality of entrainment means of said respective compartment.

4,058,203

BULK MATERIAL DISLODGING AND GATHERING APPARATUS

Aubrey C. Briggs, Carnegie, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed July 1, 1976, Ser. No. 701,898
Int. Cl.[2] B65G 65/22
U.S. Cl. 198—509 6 Claims



1. Apparatus for dislodging and drawing bulk material toward a depending elongated bulk material transporter having lifting means which rotates in an elongated closed plane top to raise the bulk material from the lower end of the transporter to the upper end thereof, said apparatus comprising:

a first elongated member extending laterally out of the plane of said elongated loop formed by the lifting means near the lower end of the transporter,

a second elongated member extending laterally from the extended end of said first elongated member and rotatable with respect to the loop formed by the lifting means about the longitudinal axis of the first elongated member, said second elongated member extending beyond the elongated closed loop formed by the lifting means except when said second elongated member is rotated toward the upper end of the transporter,

elongated dislodging and gathering means for dislodging and drawing bulk material along a longitudinal axis thereof, and

connecting means pivotally connecting one end of the elongated dislodging and gathering means to near the face end of the second elongated member for rotation of the dislodging and gathering means about said one end in a plane containing the longitudinal axis of said elongated dislodging and gathering means.

4,058,204

BELT CONVEYOR

Simon Arieh, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge, Geneva, Switzerland

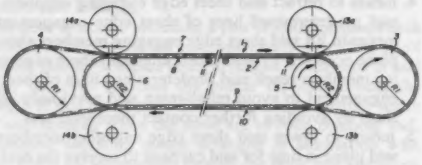
Continuation-in-part of Ser. No. 470,290, May 15, 1974, Pat. No. 3,967,720. This application May 12, 1976, Ser. No. 686,224
Claims priority, application Switzerland, May 16, 1973, 6942/73; May 16, 1975, 6365/75
Int. Cl.[2] B65G 16/30
U.S. Cl. 198—833 6 Claims

1. In a belt conveyor having at least one straight load bearing zone and comprising:

a. a pair of flexible elementary belts each having a neutral axis and a reinforcing layer embedded in the vicinity of said neutral axis so as to reinforce each belt at least longitudinally;

b. a regular array of projections and intermediate recesses arranged on one side of each elementary belt so that the projections of one belt fit exactly into corresponding recesses of the other belt thereby to provide positive engagement with rigid interlocking of the elementary belts so as to render them solid with each other, at least longitudinally by their superposition and positive engagement along straight portions thereof; and

c. belt guide means which define the paths of the elementary belts so as to provide: first curved path portions arranged to bring the elementary belts progressively together into mutual positive engagement and rigidly interlock relationship at one end of said load bearing zone of the conveyor; a common straight path portion wherein the superposed elementary belts remain positively engaged and rigidly interlocked from said one end to the opposite end of the straight load bearing zone and are thereby made solid with each other at least longitudinally whereby to transmit shear forces due to flexure from one belt to the other, so that the elementary belts thereby form together a straight, rigid composite beam assembly wherein the respective reinforcing layers of the belts of this assembly exert a



combined reinforcing action providing substantial rigidification of the composite beam assembly; and second curved path portions arranged to progressively disengage and thereby separate said elementary belts beyond said opposite end of the load bearing zone, whereby said belts may separately undergo a desired directional change along their respective second curved path portions, the improvement consisting of:

d. said guide means including belt deflecting means so arranged in the vicinity of each end of said straight load bearing zone that said elementary belts are deflected in opposite directions around centers of curvature which are longitudinally shifted with respect to each other at each end of said straight load bearing zone, to thereby substantially obviate friction between said projections and recesses when said belts are on the one hand progressively engaged and thereby brought into rigidly interlocked relationship at one end of said straight load bearing zone, and when the rigidly interlocked belts are, on the other hand, progressively separated from each other beyond the opposite end of said straight zone of the conveyor.

4,058,205

APPARATUS FOR TREATING OIL SHALE

Thomas C. Reed, Jr., 818 Heather Court, Houston, Tex. 77024

Division of Ser. No. 434,598, Jan. 18, 1974, Pat. No. 3,939,057. This application Oct. 17, 1975, Ser. No. 623,354
Int. Cl.[2] C10B 1/10, 49/04, 53/06
U.S. Cl. 202—86 8 Claims

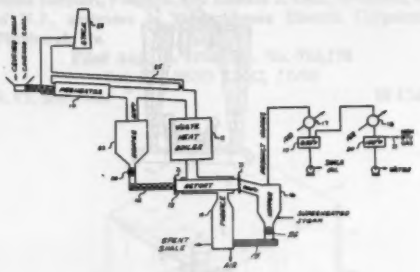
1. An apparatus for extracting crude oil from oil shale comprising

a rotary preheater for receiving a feed of crushed oil shale feed,

a rotary retort for receiving said crushed oil shale and for heating the oil shale to decompose kerogen to oil and evaporating said oil,

means connected to and communicating with said rotary retort and said rotary preheater for transferring said crushed oil shale from said rotary preheater to said rotary retort, and

for preventing vapors from passing from one into the other,
a hopper means for receiving the retorted oil shale and for stripping residual oil therefrom,
means connected to and communicating with said rotary retort and said hopper for transferring said retorted oil shale from said rotary retort to said hopper,
a furnace for receiving the crushed oil shale substantially stripped of oil and having char thereon and for burning said char to provide hot gases for operation of said apparatus,



means connected to and communicating with said hopper and said furnace for transferring said retorted oil shale from said hopper to said furnace,
means for passing said hot gases from said furnace into contact with said rotary retort for indirectly heating said crushed oil shale therein, and
means to pass said hot gases used to indirectly contact said rotary retort for direct contact with said crushed oil shale feed in said preheater.

4,058,206

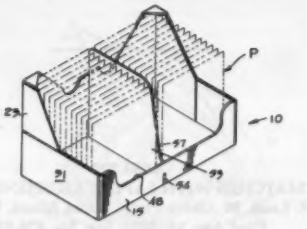
DISPLAY CARTON AND BLANK THEREFOR

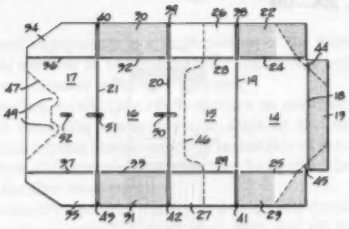
Hugh B. Morse, San Jose, and Robert B. Johnson, Santa Clara, both of Calif., assignors to Helmut E. W. Masch, San Jose, Calif.

Filed July 19, 1976, Ser. No. 706,889
Int. Cl.² B65D *5/50, 5/54*
U.S. Cl. 206—44 R **21 Claims**

1. A display carton comprising
vertically disposed front and back panels,
a vertically disposed pair of side panels connected to said front and back panels,
horizontally disposed top and bottom panels each connected to said front, back and side panels,
a vertically disposed separate partition panel disposed in said carton between said side panels and extending between said front and back panels to define an unobstructed receptacle on each side of said partition panel,
means releasably locked said partition panel to at least said front and back panels comprising at least one lock tab formed on opposite ends of said partition panel and engaged within a slot formed in a respective one of said front and back panels and in said bottom panel, said slot extending across a common scoreline connecting said bottom panel to a respective one of said front and back panels; and
means defining a continuous tear line through at least some of said front, back, side and top panels for dividing said carton into a removable upper section and a lower section adapted to retain a plurality of packages on either side of said partition panel in said lower section.

15. A blank cut and scored to consecutively define a rectangular top panel, a rectangular front panel, a rectangular bottom panel sized identically with said top panel, a rectangular back panel sized identically with said front panel, means defining a plurality of slots through at least some of said panels and disposed in colinear relationship thereon for adaption to receive lock tabs of a partition panel therein, means defining separate tear lines in at least some of said panels for forming a continous tear line upon erection of said blank into a display carton for separating said display carton into a removable upper section and a lower section adapted to retain a plurality of packages therein, a flap connected to an edge of said top panel and being substantially coextensive therewith, a pair of side flaps connected on lateral sides of each of said top, front, bottom, and back panels, and wherein said means defining separate tear





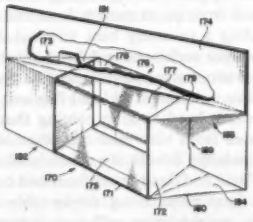
lines comprises a first tear line formed in one of the side flaps connected to said top panel, said top panel and the flap connected to a forward edge of said top panel, a second tear line formed in the second side flap connected to said top panel, said top panel and the flap connected to the forward edge of said top panel, and a third tear line formed in the side flaps connected to said front panel and said front panel and a fourth tear line formed solely in said back panel.

4,058,207

CONTAINER

Irving Morton Koltz, Scarborough, Canada, assignor to International Inpak, Inc., Saddle Brook, N.J.

Continuation of Ser. No. 272,112, July 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 160,806, July 8, 1971, abandoned. This application Apr. 2, 1975, Ser. No. 554,241
Int. Cl.² B65D *25/54*
U.S. Cl. 206—45.34 **2 Claims**



1. A container for merchandise and comprising:
a generally rectangular container having four sides and two ends defining a generally rectangular interior, said sides having a predetermined length and breadth, and,

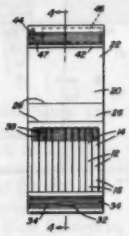
transparent panel means forming at least one said side and extending the full lenght and breadth thereof, and further including transparent panel means forming three sides of said container namely a front side, a rear side, and an upper side, and display panel means formed integrally with said ends and extending along a median line of said transport upper side.

4,058,208

BOOK MATCHES WITH SAFETY LIGHTING FEATURES

Owen H. Lund, 90 Albion Place, Staten Island, N.Y. 10302

Filed Apr. 14, 1976, Ser. No. 676,811
Int. Cl.[2] A24F *27/00*
U.S. Cl. 206—109 9 Claims



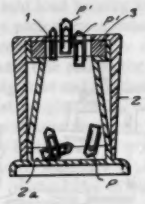
1. A matchbook including a plurality of matches including ignitable head end portions and base end portions, said base end portions connected to, but separable from, a mounting panel, a book cover including front and rear panels joined by means of an integral bendable reversely bent panel portion connecting and extending between adjacent parallel marginal portions of said front and rear panels, the end of said rear panel remote from said front panel including a reversely bent terminal end directed over the front face of said rear panel, said mounting panel being secured between said reversely bent terminal end and the opposing portion of said rear panel with said head ends extending toward said bendable panel portion, said front panel overlying the sides of said matches remote from said rear panel with the end of said front panel remote from said bendable panel portion removably anchored to the adjacent marginal edge of said terminal end, the outer surface of said reversely bent terminal end including a dark coating thereon simulating match head striking surface area thereon, the edge of said front panel remote from said bendable panel portion including a reversely bent terminal end flap closely overlying the inner surface of said front panel and secured to said front panel at one side marginal portion thereof, one of the opposing surface portions of said end flap and said front panel including a match head striking coating thereon in position normally hidden from view and the other of said opposing surface portions being devoid of a match head striking coating, the portion of said end flap remote from said one side marginal edge of said front panel being displaceable away from the opposing front panel portion sufficient to receive one of said head end portions therebetween for frictional engagement with said match head striking coating, said ignitable head end portions include opposite sides, each head end portion including an ignitable coating thereon limited to one of said opposite sides.

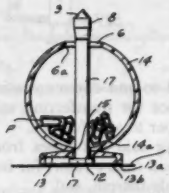
4,058,209

PAPER-CLIP DISPENSER

Karl Wilhelm Schmidt, Idar Oberstein, Germany, assignor to Gebruder Schmidt Metallwarenfabrik, Idar-Oberstein, Germany

Filed May 17, 1976, Ser. No. 687,390
Claims priority, application Germany, Jan. 15, 1976, 2601298
Int. Cl.[2] B65D *83/00*; A45C *11/00*
U.S. Cl. 206—350 8 Claims





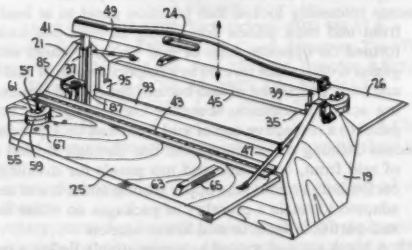
1. A paper-clip dispenser comprising an upwardly open receptacle having a mouth at the top and a hole in the bottom thereof, and a stem movably received in said hole and carrying a magnet at its upper end whereby elevation of said receptacle from a surface enables said stem to fall through said hole and bring said magnet into the proximity of paper clips contained in said receptacle and replacing of said receptacle on a surface causes said stem to raise in said receptacle and carry paper clips to the mouth thereof, said mouth having an edge positioned to wipe excess paper clips from said magnet, said stem extending through said mouth when said receptacle rests on said surface.

4,058,210

TOOL CASE

William J. Mitchell, Rte. 695, Trevilians, Va. 23170

Filed Sept. 14, 1976, Ser. No. 723,106
Int. Cl.[2] B65D *85/28, 25/28*
U.S. Cl. 206—372 9 Claims



1. A tool case comprising
base, sides and end sections secured together;
lid sections hinged at one edge thereof to the upper edges of said side sections;
a handle;

means for slidably mounting said handle for vertical movement relative to said base;

said handle abutting the free edges of said lids when said lids are closed and said handle is in the lowermost position; and

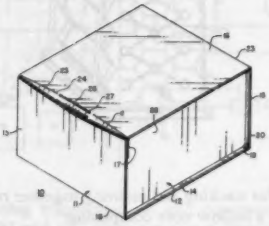
means for releasably securing said handle to at least one of said end sections when said handle is in its lowermost position.

4,058,211

ELECTRIC LAMP BULB PACKAGE AND SLEEVE COMPONENT THEREFROM

Thomas Barbieri, Peapack, and Edward J. Getz, Irvington, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1976, Ser. No. 713,178
Int. Cl.² B65D *85/42, 13/06*
U.S. Cl. 206—422 **10 Claims**



1. A package comprising;

a wrapper that is of tubular configuration and open at each end and includes a plurality of interconnected walls having end edges that are substantially straight and so arranged that the open ends of the wrapper are terminated along planes that are substantially parallel to one another,

fragile merchandise disposed within said wrapper, and

an open-ended sleeve that is fabricated from stiff single-ply packaging material that is devoid of corrugations and is slip-fitted over said wrapper and is so oriented that oppositely disposed walls of the sleeve overlie and cover the open ends of the wrapper and thus retain the fragile merchandise within the resulting package,

said sleeve having additional walls that are connected to each other and said oppositely disposed walls along a series of spaced junctures which provide the sleeve with a plurality of corner portions that are in frictional engagement with the associated end edges of the wrapper,

at least two of said junctures which are located on opposite sides of the sleeve being of arcuate configuration and providing corner portions that are bowed inwardly and thus exert a wedging force on the engaged portions of the wrapper that retains the wrapper and the contained merchandise within the sleeve despite the smooth inner surfaces of the non-corrugated sleeve.

4,058,212

PACKAGE FOR CONTAINING PRODUCTS

Ihor Wyslotsky, 3311 Montmarte, Hazelcrest, Ill. 60429

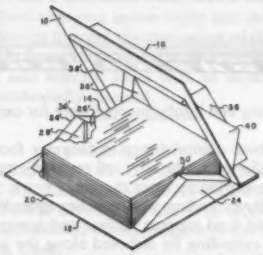
Filed Apr. 26, 1976, Ser. No. 680,087
Int. Cl.² B65D *73/00, 45/00*
U.S. Cl. 206—470 **9 Claims**

1. A container for enclosing a product comprising:

a preformed base member of plastic material having a shallow, upwardly opening, first recess for receiving the bottom portion of the product, said recess being defined by a bottom wall and substantially vertically extending side walls which terminate in a peripheral, horizontally disposed first flange extending about the first recess;

a preformed cover member of plastic material having a downwardly opening second recess and a second peripheral flange for mating with the first recess and said first flange, respectively, so as to form an enclosure for the product and to afford areas on contacting faces of said first and second flanges for sealing the cover member on the base member, said first flange being adapted at one side to be permanently joined to said second flange and being adapted at the other three sides to be sealed so as to permit ready separation for opening the cover and hinging it on said one side;

a latching rib on said cover member along the side of said second flange opposite said one side for seating in frictional engagement in a front portion of the recess in said base member so as to provide for frictionally holding said cover member when it is reclosed;



upstanding, reinforcing rib formations on said base member and extending along opposite sides of the first recess which adjoins the permanently sealed side of the container which rib formations serve in part to confine the product in the first recess; and

downwardly opening, reinforcing side wall formations on said cover member which mate with said rib formations and serve to guide the cover into closed position.

4,058,213

LOW TEMPERATURE VAPOR PHASE STERILIZATION AND STORAGE OF BIOLOGICALLY ACTIVE INJECTABLE MATERIALS

Irwin Stone, 1331 Charmwood Square, San Jose, Calif. 95117

Filed July 6, 1976, Ser. No. 702,628
Int. Cl.² B65B *31/00;* **A61L** *13/00;* **A61K** *31/375*
U.S. Cl. 206—524.4 **4 Claims**

1. A method for sterilizing and storing a biologically active particulate solid material adapted for injection into a patient which comprises:

a. placing a charge of the material in a sealable container

b. adding to said container an amount of ethyl alcohol sufficient to produce a sterilizing ethyl alcohol vapor in said container

c. sealing said container and

d. storing said sealed container for a period of time at least sufficient to sterlize said material.

3. An article of manufacture comprising a sealed disposable container containing an amount of biologically active solid particulate material adapted for injection into a patient and an amount of ethyl alcohol sufficient to generate a sterilizing vapor of ethyl alcohol in said container.

4,058,214
CARRYING AND INSULATING ENCLOSURE FOR PIZZA PIE CONTAINERS

Louis C. Mancuso, 121 Brooklyn-Stanhope Road, Stanhope, N.J. 07874

Filed Apr. 21, 1976, Ser. No. 678,889
Int. Cl.[2] B65D *11/10, 51/16;* A45C *11/20*
U.S. Cl. 206—545 4 Claims

1. A carrying and insulating enclosure for carry-home foods comrising:

a hollow base comprising a rectangular food support surface, defining a plurality of regularly spaced, shallow moisture storing recesses therein,

an upwardly extending wall member extending the perimeter of said food support surface and integral therewith,

a laterally extending lip disposed along the perimeter of the upper edge of said wall member, said lip defining a plurality of semicircular, laterally extending protrusions lying in paired, diametrically opposed relationship to each other, said protrusions defining a corresponding number of lid detents,

at least two bevelled vent structures provided in at least one pair of diametrically opposed lid detents, and

a lid having a peripheral configuration adapted for complementary press-fittable engagement with said detents, said lid comprising regularly spaced, diametrically opposed projections corresponding in shape to said detents and adapted to mate therewith, at least one pair of said projections provided with vent openings situated to facilitate the selective registration with said bevelled vent structures.

4,058,215
FRAMED EMBROIDERY ASSEMBLY

Ian Marchbank, Barnt Green, England, assignor to Abel Morrall Limited, England

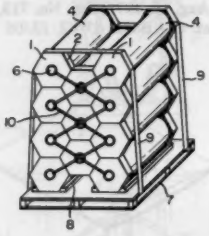
Filed Oct. 3, 1975, Ser. No. 619,307
Claims priority, application United Kingdom, Oct. 24, 1974, 46153/74
Int. Cl.[2] B65D *69/00;* D06C *3/08;* G09F *1/10*
U.S. Cl. 206—574 9 Claims

1. A framed textile fabric assembly comprising a peripheral frame surrounding a central opening, the frame being made of thermoplastics and having an internal flange open to the rear of the frame, a textile fabric having a pattern formed thereon to guide hand embroidery, said textile fabric being permanently secured directly to said frame across said opening and being welded to the rear face of said flange in a groove formed in said rear face during formation of said weld, a back member for releasable fitting to said frame behind said textile fabric and a resilient pad compressible in thickness between said textile fabric and said back member so as to support and tension said textile fabric when said frame, pad and back member are assembled together.

4,058,216
DEVICE FOR PACKING ROLL-LIKE ARTICLES

Tadao Tsuyuguchi, Gifu, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Apr. 14, 1975, Ser. No. 568,098
Claims priority, application Japan, Apr. 16, 1974, 49-41704
Int. Cl.[2] B65D *85/66, 19/00, 71/02*
U.S. Cl. 206—597 2 Claims



2. Means for stacking and securing together roll-like articles wound onto a hollow core comprising:

a plurality of said roll-like articles having first and second ends;

a plurality of capping and stacking means on both ends of said roll-like articles for forming flat stacking surfaces on said roll-like articles and for protecting the ends of said articles, said capping means on said first ends contacting each other and said capping means on said second ends also contacting each other, each capping and stacking means comprised of:

a hexagonal face wall adjacent the end surface of said article for protecting said end surface, said face wall having a hole therethrough corresponding to the hollow core of said article,

cushioning material between said face wall and the end surface of said article,

a hollow protrustion surrounding said hole in said face wall extending therefrom into said hollow core, and

a side wall surrounding said face wall and extending therefrom towards said article for protecting the edges of the end of said article;

a support beneath said plurality of roll-like articles;

first band means passing through said hollow protrusions in said capping means and said hollow cores of said roll-like articles for holding said capped roll-like articles together; and

second band means attached to said base and surrounding said roll-like articles for securing said articles to said base.

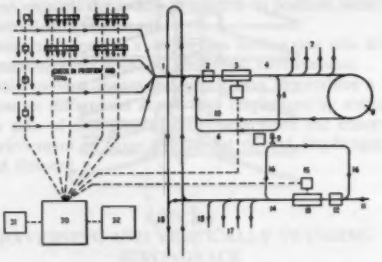
4,058,217
AUTOMATIC ARTICLE SORTING SYSTEM

Richard Vaughan, Maroubra, and Peter Harold Cole, Wahroonga, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Continuation of Ser. No. 465,512, April 30, 1974, abandoned.
This application Dec. 10, 1975, Ser. No. 639,466
Claims priority, application Australia, May 1, 1973, 3145/73; Aug. 30, 1973, 4676/73
Int. Cl.[2] B07C *3/10*
U.S. Cl. 209—74 M 12 Claims

1. Apparatus for sorting articles such as airline baggage comprising at least one ticket issuing machine (TIM) contain-

ing a predetermined plurality of interrogatable labels each bearing indicia indicative of a serial number taken from a closed and limited set of serial numbers, means in each said TIM for issuing said labels in consecutive order, label interrogation means responsive to said serial numbers on said labels, baggage sorting means constructed and arranged to direct each article of baggage being sorted along a desired one of a plurality of alternate routes, conveyor means arranged to carry articles of baggage from each said TIM past the label interrogation means to the baggage sorting means, said articles passing through said baggage sorting and conveyor means without additional machine readable sorting information therewith,



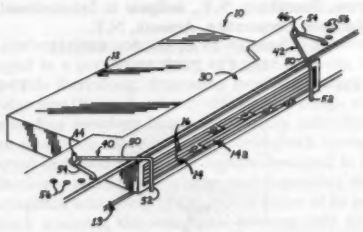
said articles being transported on said conveyor means between said TIM and said sorting means a computing system linked with each said TIM, with said label interrogation means and with said article sorting means, means for entering routing instructions into the computer in relation to each serial number, said serial number related instructions being entered into the computing system when the TIM issues an interrogatable label to an article of baggage, the computing system being programmed to actuate said sorting means in accordance with a serial number on receipt of a signal from said interrogating means indicating the presence in said interrogating means of an article of baggage carrying a label bearing indicia indicative of that serial number.

4,058,218

APPARATUS FOR REMOVING A SHEET FROM A STACK OF SHEETS

William C. Kinsinger, New York, N.Y., assignor to Metagraphic Systems, Inc., Bronx, N.Y.

Filed Aug. 26, 1976, Ser. No. 717,922
Int. Cl.[2] B07C *5/12*
U.S. Cl. 209—80.5 10 Claims



1. Apparatus for removing any sheet selected from a stack of sheets without removing adjacent unselected sheets in said stack comprising:

means for selecting and withdrawing a desired sheet in a first direction from one end of said stack;

support means arranged adjacent said stack of sheets;

sheet-engaging means mounted on said support means and extending alongside said one end of said stack adjacent a corner of the stack and extending in a direction substantially perpendicular to the direction that said selected sheet is moved when being withdrawn from said stack;

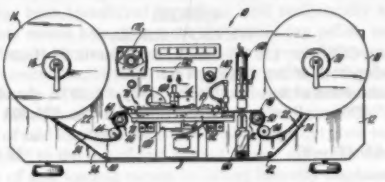
said sheet-engaging means being operable to resist movement of the unselected sheets in said first direction and being operable to apply a force against at least one side of said selected sheet while the other side of said selected sheet is in contact with a stop member to buckle said selected sheet between said sheet-engaging means and said stop member as it is being withdrawn in said first direction from said stack by said selecting means so that said selected sheet has a decreased width which will allow it to pass said sheet-engaging means while said sheet-engaging means continues to resist the movement of the unselected sheets in said first direction, and so that the area of surface contact of said selected sheet with an adjacent sheet or sheets is substantially reduced.

4,058,219

METHOD AND APPARATUS FOR AUTOMATICALLY TESTING REELED AXIAL-LEAD ELECTRICAL DEVICES UNDER ENVIRONMENTAL CONDITIONS

Peter W. Quinn, Danbury, Conn., assignor to Lorlin Industries Inc., Danbury, Conn.

Filed Oct. 26, 1976, Ser. No. 735,419
Int. Cl.[2] B07C *5/08*
U.S. Cl. 209—81 R 20 Claims



1. Apparatus for elecrically testing taped electrical components secured to a pair of spaced tapes to form a string of components comprising:

a take-up reel;

a supply reel;

drive means for conveying said taped electrical components from said supply reel to the take-up reel;

an environmental chamber means disposed intermediate said supply and take-up reels for selectively varying the temperature of said electrical components relative to the temperature of the pair of spaced tape carriers; and

electrical testing means disposed downstream of said environmental chamber means for sequentially testing the electrical components prior to the rewinding on the take-up reel.

4,058,220

DISPLAY DEVICE WITH OVERLAPPING CARDS

Albert Henry Torongo, Yardley, Pa., assignor to Borden, Inc., Columbus, Ohio

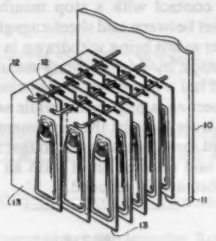
Filed May 12, 1976, Ser. No. 685,642
Int. Cl.[2] A47F *1/00*
U.S. Cl. 211—57.1 3 Claims

1. A display device and a plurality of overlapping display packages thereon comprising;

a. a board having a plurality of pegs arranged side by side in a row, said pegs being suitable for supporting display packages;

b. a plurality of display packages each of which includes an article of merchandise secured to a card, each of said cards being of a uniform width and having an off-center hole near one upper corner for accepting one of said pegs and a clipped corner at the opposite upper corner of the card, said article of merchandise being positioned off-center at

that side wherein said off-center hole is located, said display packages being suspended on said pegs in multiple layers of overlapping cards, the distance between holes of adjacent suspended cards being less than the overall width



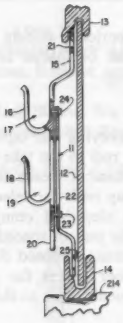
of a single card, and each card being suspended from a single peg through its off-center hole with the clipped corner of the card being immediately adjacent the adjoining peg, whereby at least one of said articles remaining on any one of said pegs is entirely exposed to view.

4,058,221

WINDOW RACK

Johnny C. Elkins, 120 W. 4th St., and Marvin C. Hanz, 423 S. Irving, both of San Angelo, Tex. 76901

Continuation of Ser. No. 256,509, May 24, 1972, abandoned.
This application June 15, 1976, Ser. No. 696,303
Int. Cl.[2] A47F *5/08, 7/00*
U.S. Cl. 211—87 **12 Claims**



1. A rack assembly for supporting guns from a window and gasket assembly of a vehicle, comprising:

first and second elongated support members;

each of said support members having opposed end portions;

means by which one said opposed end portion of said first member is adjustably affixed in overlapping relationship with respect to one opposed end portion of said second member thereby leaving free opposed ends depending from said rack assembly;

the marginal end portion of each said free opposed end being reduced in thickness and disposed in a common plane;

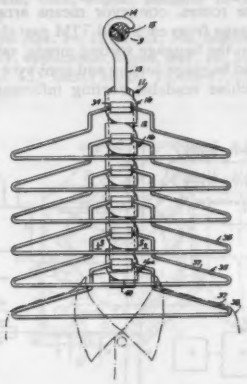
teeth affixed to each said free opposed end for engaging the gasket of a window; said teeth are placed substantially normal to said marginal end portion of said member; each said free opposed end adapted to be placed between the window and the gasket so that the gasket supports the rack; and means affixed to said first and second elongated support members for supporting guns therefrom.

4,058,222

MULTIPLE CLOTHES HANGING DEVICE

Evelyn R. Singer, 3450 Sawtelle Blvd., Los Angeles, Calif. 90066

Filed Aug. 5, 1976, Ser. No. 712,018
Int. Cl.[2] A47F *7/19*
U.S. Cl. 211—118 **9 Claims**



1. A multiple garment hanging device comprising

an elongate track member,

means for supporting said track member in the vertical position,

means on said track member forming a stop,

a plurality of slides slideable along one side of said track member,

one of said slides being effective to limit against said stop,

the others of said slides being effective to limit against one another,

garment hangers supported by said slides, and

retaining means on each of said slides,

said retaining means slideably engaging said track member to normally retain said respective slide on said track member,

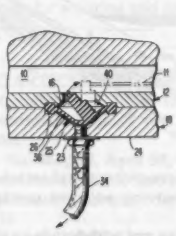
each of said slides being rockable in a plane parallel to the length of said track member to release said retaining means thereof from said track member whereby said rocked slide may be withdrawn from said one side of said track member independently of the remaining ones of said slides.

4,058,223

ARTICLE HANDLING DEVICE

Bernd Cruse, Staatsburg, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 19, 1975, Ser. No. 588,531
Int. Cl.[2] F01B *19/02*
U.S. Cl. 214—1 BB **17 Claims**



1. A device for engaging an article movable in a controlled environment including:

an element selectively movable relative to the article to be engaged to cause said element to selectively engage the article movable in the controlled environment without

blocking the controlled environment, the article being movable in a plane transverse to the location of said element and adapted to be positioned during its movement in the plane to a position in which said element can engage the article and then be removed from the position in which said element can engage the article;

means to support said element, said support means isolating said element within the controlled environment, said element being free standing within the controlled environment;

means to move said support means to move said element from a position in which said element cannot engage the article to interfere with movement of the article in the controlled environment in the plane transverse to the location of said element to a position in which said element engages the article to control its position within the controlled environment;

said support means is a diaphragm having one side always communicating with the controlled environment;

and said moving means includes means to produce a fluid pressure differential across said diaphragm by acting on the side of said diaphragm remote from the controlled environment to cause movement of said diaphragm and said element.

4,058,224

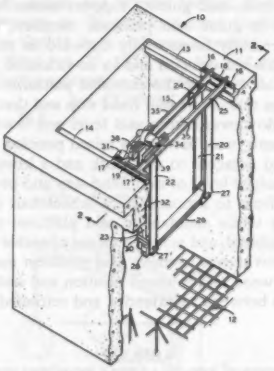
TRAVERSING AND VERTICALLY SWINGING STRONGBACK

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Division of Ser. No. 408,767, Oct. 23, 1973, Pat. No. 3,894,327. This application Mar. 28, 1975, Ser. No. 563,030

Int. Cl.² B65G 7/00

U.S. Cl. 214—1 CM **3 Claims**



1. Apparatus for manipulating a nuclear fuel element that is submerged in a pool comprising, a bridge spanning the pool and movable therealong, depending members extending from said bridge into the pool and movable on said bridge structure, said depending members being substantially inflexible with a constant separation therebetween, a strongback having a first and second end, said strongback being submerged in the pool and selectively positioned between said depending members, said strongback selectively pivotal about either of its ends, said strongback spanning the separation between said depending members, a pin extending from at least one of said depending members through a pivotal connection on the first end of the said strongback to enable said strongback to pivot through approximately 90° from a direction that is generally between said depending members and parallel to said bridge into a direction that is essentially perpendicular to said bridge and parallel to said depending members in order to engage and support the nuclear reactor fuel element thereon.

4,058,225

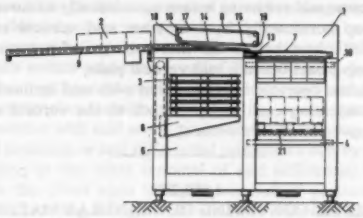
METHOD FOR LOADING A LAYER OF GOODS ON A MOVABLE SUPPORTING MEANS AND A PALLET LOADER FOR CARRYING OUT THE METHOD

Bernt Owe Janson, Smedbergsvagen 10,, 43700 Lindome, Sweden

Continuation of Ser. No. 654,474, Feb. 2, 1976, abandoned. This application Jan. 31, 1977, Ser. No. 764,524

Int. Cl.² B65G 37/24

U.S. Cl. 214—6 P **5 Claims**



1. A device for loading articles onto pallets comprising means for storing a plurality of empty pallets in stacked relation, pallet loading means juxtaposed said pallet storing means, reciprocally movable plate means for transferring the top empty pallet from the stack of pallets to the top of said pallet loading means, said pallet storing means including means for raising the stack of pallets in the storing means after the top pallet has been transferred therefrom, said reciprocally movable plate means being disposed above said top pallet, means for feeding at least one article onto said reciprocal plate means for movement therewith when an empty pallet is transferred from the top of said storing means to the top of said loading means, the at least one article being deposited on said pallet at the top of said loading means when said reciprocal plate means is retracted to the top of said storing means, support means at the top of said loading means including laterally displaceable members for receiving the top pallet from said storing means, elevator means for supporting and raising the loaded pallet above said support means to permit said laterally displaceable members of said support means to be laterally displaced beyond the marginal edges of the loaded pallet, and means for displacing said laterally displaceable members whereby the pallet may then be lowered by said elevator means.

4,058,226

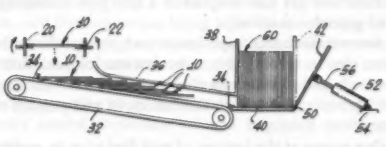
HIGH SPEED AUTOMATIC STACKER FOR PARTITIONS AND THE LIKE

Charles Peters, Jr., Norco, Calif., assignor to Box Innards, Inc., Anaheim, Calif.

Filed Jan. 19, 1976, Ser. No. 650,247

Int. Cl.² B65G 57/00

U.S. Cl. 214—7 **9 Claims**



1. A high speed automatic stacker for collapsed partitions or the like comprising:

a vertical plate;

an inclined plate inclined at an obtuse angle with respect to the horizontal,

the lower edge of said vertical plate being in a plane above the lower edge of said inclined plate;

a horizontal support between said vertical and inclined plates;

means to successively feed partitions in overlapping relation and in groups beneath said vertical plate and force the partitions of each group to gather into a stack against said inclined plate and supported on edge on said horizontal support;

means for removing each group thus stacked from between said vertical and inclined plates;

means synchronizing said feed means and removing means to cause said removing means automatically to move each group horizontally from between said vertical and inclined plates before the first partition of a succeeding group passes beneath said vertical plate;

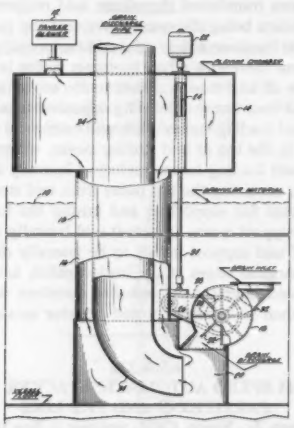
and means operable in conjunction with said inclined plate for orienting each inclined stack to the vertical so the removed stacks are vertical.

4,058,227

PNEUMATIC CONVEYING OF GRANULAR MATERIALS FROM A NONPRESSURIZED ENVIRONMENT

MacLean C. Shakshober, Chadds Ford; Eugene Schorsch, Springfield, and Paul E. Atkinson, West Chester, all of Pa., assignors to Sun Shipbuilding & Dry Dock Company, Chester, Pa.

Filed Oct. 12, 1976, Ser. No. 731,274
Int. Cl.[2] B65G *53/04*
U.S. Cl. 214—13 1 Claim



1. A system for removing granular material such as a food grain from an open container such as a barge to the hold of a ship which comprises:

a. a plenum chamber having input means for a source of pressurized gas and coupled to a first pipe extending into said granular material;

b. a second discharge pipe inside and concentric with said first pipe extending from the bottom of said first pipe through said plenum chamber to provide for discharge of said granular material to the outside of said plenum chamber;

c. valve means at the bottom of said first pipe to control the flow of granular material to said second concentric pipe;

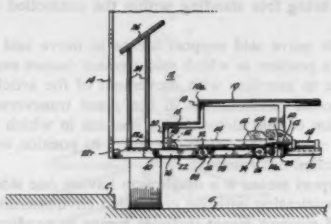
whereby, when a pressurized gas from the ship to receive the granular material is introduced into said plenum chamber, said gas flows downwardly through said first pipe and pushes any granular material admitted by said valve upwardly through said second discharge pipe from which it may be conveyed to the hold of the ship receiving the granular material.

4,058,228

PASSENGER VEHICLE ACCESS STAIR AND ELEVATOR APPARATUS

Edward L. Hall, 16240 NE. 14 St., Bellevue, Wash. 98008

Filed Mar. 4, 1976, Ser. No. 663,770
Int. Cl.[2] B60P *1/44*
U.S. Cl. 214—77 R 15 Claims



1. In a passenger vehicle having a passenger deck therein accessible through an entryway including a foot passenger access stairway having a fixed passenger access step intermediate in height between the deck and ground level, vehicle-mounted passenger elevator apparatus mounted in cooperative association with said entryway comprising a horizontally disposed passenger platform member dimensioned to accomodate a wheelchair thereon, guiding support means including parallel supporting guides fixedly mounted at respectively opposite sides of said entryway beneath said deck and extending horizontally outward therefrom, and carriage means movably supported on said guides and in turn supporting said platform member normally in a retracted position substantially at the level of said guides and retracted at least part of its width beneath said deck, said guiding support means being formed and operable to guide said platform member for extension movement generally horizontally outward in said entryway from such retracted position and to an extended position and further operable to guide the extended platform member in a path of motion that clears said fixed step and that ranges both upward and downward from said level and inward and outward in said entryway between a raised position substantially flush with and adjacent to said deck and a lowered position beneath the height level of said fixed step and projecting outwardly therefrom to accomodate a wheelchair on said platform member while maintaining said platform member substantially horizontal, and actuator means operable through said guiding support means to move said platform member, when extended, between said lowered position and said raised position, and also between its extended and retracted positions.

4,058,229

LIFTING MECHANISM FOR TRUCKS

James Thomas Triplett, P.O. Box 488, Chester, S.C. 29706

Filed Dec. 3, 1975, Ser. No. 637,457
Int. Cl.[2] B60P *1/48*
U.S. Cl. 214—77 R 7 Claims

1. A lifting device for a truck for lifting objects loaded on a platform from the ground and the like onto the bed of the truck while maintaining said platform parallel to the ground during the lifting operation, said lifting mechanism comprising:

a frame member adapted to be supported over the bed of said truck,

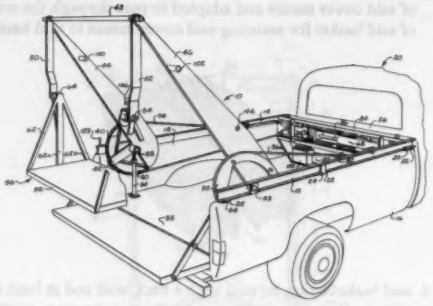
a pair of laterally spaced booms having lower ends thereof pivotally supported on said frame member,

elongated rigid lifting arms pivotally connected to remote ends of said spaced booms,

means for pivotally connecting the free ends of said lifting arms to said platform,

power means for rotating said laterally spaced booms for lifting said platform from said ground onto the bed of said truck,

abutment means for engaging said elongated rigid lifting arms as said booms are rotated over the bed of said truck for shortening the radius of the arcuate path of travel of said platform as said load is loaded onto said truck bed and



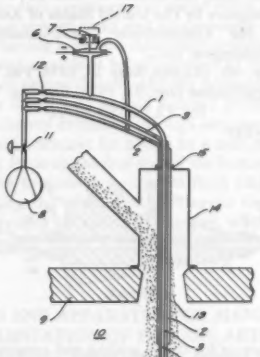
said abutment means causing said elongated rigid lifting arms to be pivoted to a position along side of said boom when said boom is rotated to a position substantially parallel to said truck bed.

4,058,230

ARRANGEMENT FOR PNEUMATICALLY REGULATING THE INTRODUCTION OF SUBSTANCES INTO CHAMBERS

Heinz Bellenberg, Bottrop; Werner Kucharzyk, Essen; Wolfgang Rohde, Essen, and Werner Siebert, Essen, all of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Germany

Filed Feb. 27, 1976, Ser. No. 662,017
Claims priority, application Germany, Mar. 8, 1975, 2510191
Int. Cl.² F23K *3/00*
U.S. Cl. 214—18.2 **17 Claims**



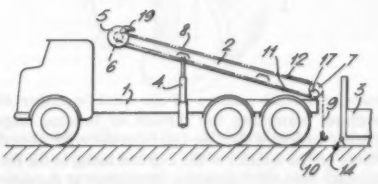
1. A particulate level sensing arrangement particularly for use in the regulating of the level of coal in a coke oven comprising a chamber which is to be filled with solid particles to a predetermined level; means for feeding the solid particles into said chamber; switch means for said feeding means operative for interrupting the introduction of the solid particles into said chamber in response to a signal generated when the solid particles fill said chamber to said predetermined level, said switch means including a differential pressure switch actuable is response to the generation of a predetermined pressure differential thereacross, said differential pressure switch having two opposing terminals; means for admitting pressurized gas into said chamber so as to permit the generating of a pressure differential across said differential pressure switch; and means for transmitting pressure signals to said differential pressure switch, said transmitting means including a sensing conduit connected with one terminal of said differential pressure switch and having an end portion arranged in said chamber at approximately said predetermined level so as to permit the pressure characteristics generated in said sensing conduit due to the flow of pressurized gas into said chamber to be changed and a corresponding signal to be transmitted to said differential pressure switch when the level of the solid particles in said chamber reaches said predetermined level, and said transmitting means also including compensating means operative in cooperation with said sensing conduit for preventing unintentional actuation of said differential pressure switch by counterbalancing at the other terminal of said differential pressure switch the effect upon said one terminal of pressure waves generated during filling of said chamber with said solid particles.

4,058,231

APPARATUS FOR MOVING AN EXCHANGEABLE PLATFORM OR A CONTAINER ON TO AND OFF OF A TIPPING FRAME OF A LORRY, TRAILER, OR THE LIKE

Heikki Visa, Vanhalinna; Ossi Rantala, Lietsala, and Antti Risti, Loimaa, all of Finland, assignors to Autolava Oy, Raisio, Finland

Filed Aug. 21, 1975, Ser. No. 606,516
Int. Cl.² B60P *1/64*
U.S. Cl. 214—516 **6 Claims**



1. Apparatus for loading and unloading an exchangeable platform onto and off of a tipping frame having an endless element, wheels located at each end of the tipping frame, the endless element moveably mounted on the said wheels, the improvement comprising: a flexible elongated element fixedly attached at one end thereof to the said endless element at an attachment point, the other end of said elongated element being free and having a hook-like engaging member thereon for releasably engaging said platform; said platform being provided with a fastening means on one end thereof, said fastening means having a hook receiving portion and limiting means, said limiting means being laterally spaced apart to form a space, said engaging member comprising at least one laterally spaced apart hook means and a positioning means, said hook means adapted to engage said hook receiving portion, said positioning means adapted to at least partly enter said space whereby lateral movement of said engaging member is restricted.

4,058,232

SAFETY CAP

Tetsuo Ohno, and Shoji Watanabe, both of Tokyo, Japan, assignors to Iko Trading Co., Ltd., Tokyo, Japan

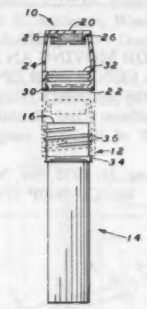
Filed Oct. 29, 1976, Ser. No. 736,828
Claims priority, application Japan, Mar. 9, 1976, 51-27100
Int. Cl.² B65D *55/02, 85/56;* A61J *1/00*
U.S. Cl. 215—217 **2 Claims**

1. A safety closure assembly comprising in combination:

the container neck defining an opening through which the container contents may be inserted and removed;

a closure cap coupled with the container neck and extending across the opening and cooperating in confining the contents within the container until it is desired to remove same therefrom, the cap including an upper closed end and a lower open end;

the exterior of the neck and the interior of the cap having cooperating interengaging means for coupling the cap to the neck in relatively easy fashion and permit the uncoupling of the cap from the neck only upon informed deliberate manipulation of the cap relative to the neck, said cooperating interengaging means comprising a zone of mating threads on the interior of the cap and exterior of the neck, said cooperating means further including rib means and recess means at a predetermined location relative to the threaded zones and adapted to engage with one another to assume a child-deterrent position at which the cap threads and neck threads are disengaged and the cap



may be turned relative to the neck in either direction without permitting the threads to become engaged to permit withdrawal of the cap from the neck, the rib means being on the interior of the cap and being in the form of an annular inwardly extending rib located at the open end of the cap, the recess means being on the exterior of the neck and being defined by a concavity in a circumferentially extending raised strip, the strip being located at a predetermined distance below the threaded zone on the container neck so that when the rib is disposed in the recess the cap threads are disengaged from the neck threads with the cap threads being disposed in the space between the neck threads and the strip, the cap being permitted to be withdrawn from the neck by initially retracting and pulling the cap in an axial direction relative to the neck to cause disengagement of the rib means and recess means and thereafter twisting the cap relative to the neck to permit the cap threads and neck threads to become engaged whereupon further twisting of the cap relative to the neck will permit removal of the cap.

4,058,233

UTENSIL BASKET FOR INSTITUTIONAL DISHWASHING MACHINES

John W. Frangos, 2 Brimbal Hill Drive, Beverly, Mass. 01915

Continuation-in-part of Ser. No. 425,237, Dec. 13, 1973, Pat. No. 3,935,958. This application Feb. 2, 1976, Ser. No. 654,108

Int. Cl.[2] B65D *7/20, 85/00, 43/14*

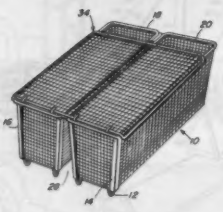
U.S. Cl. 220—19 **10 Claims**

1. Apparatus for use in washing eating utensils and the like, comprising

a. a two-position foraminous basket formed with at least one generally rectangular compartment open to the front of said basket when said basket is in an upright vertical position for receiving utensils placed therein when said basket is in a horizontal position, the length of said compartment being greater than the length of said utensils,

b. foraminous partial cover means detachably connected to said basket across the front of said compartment, and,

c. locking means, including fingers extending from the edges of said cover means and adapted to pass through the walls of said basket for securing said cover means to said basket,



d. said basket being formed with a back wall and at least one side wall substantially perpendicular to one another whereby said basket may be placed on said back wall in a horizontal position for loading and unloading said compartment and in an upright position on said one side wall for washing with said cover means in place,

e. said basket including a plurality of legs extending substantially perpendicularly from said back wall within an area spanned by said cover means.

4,058,234

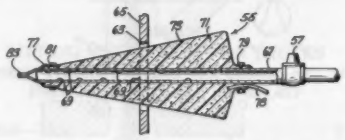
SYSTEM FOR SEALING AND REPAIRING LEAKS IN RUPTURED CONTAINERS

John J. Vrolyk, Simi, and Robert W. Melvold, Northridge, both of Calif., assignors to The United States of America as represented by the Administrator, Environmental Protection Agency, Washington, D.C.

Division of Ser. No. 582,049, May 25, 1975, Pat. No. 4,012,822. This application Dec. 21, 1976, Ser. No. 753,075

Int. Cl.[2] B65D *41/10*

U.S. Cl. 220—239 **4 Claims**



1. An applicator for use in sealing and repairing a rupture in a container wall with plastic foam material wherein said applicator comprises:

a. a tubular core member provided with a plurality of perforations in the wall thereof,

b. an open-celled sponge body surrounding the core member and communicating with the interior thereof through the perforations for receiving plastic foam material injected into the core member, and

c. a porous expandable outer covering layer surrounding the sponge body, which covering layer:

i. releases fluid pressure created when the sponge body is filled with the plastic foam material, and

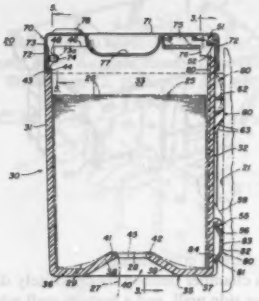
ii. permits the sponge body to expand radially on either side of the container wall to thereby seal the rupture.

4,058,235

DISPENSER FOR INTERLEAVED SHEETS OF TISSUE

Antonio Macchi Cassia, Milan, Italy, assignor to Steiner American Corporation, Salt Lake City, Utah

Filed July 21, 1976, Ser. No. 707,370
Claims priority, application Italy, May 28, 1976, 23763/76
Int. Cl.[2] B65D *85/16*
U.S. Cl. 221—48 13 Claims



1. A tissue dispenser for dispensing individual sheets of tissue from a stack of folded and interleaved sheets, said dispenser comprising an integral one-piece housing including four interconnected upstanding side walls and a bottom wall closing said side walls and co-operating therewith to define a tissue container for accommodating a stack of folded and interleaved tissue sheets therein, and a removable cover for closing the upper end of said container, said cover being formed of metal and having a recess formed in the top thereof to define an ashtray, said cover further having a plurality of ridges projecting upwardly therefrom along the front edge of said ashtray recess and co-operating to define a plurality of channels for holding cigarettes, said bottom wall including two substantially coplanar portions respectively extending inwardly from two opposed ones of said side walls substantially normal thereto and two inclined portions respectively integral with said flat portions at the inner edges thereof and converging upwardly into said container, the upper edges of said inclined portions being spaced apart and co-operating to define a dispensing slot having a width substantially less than the width of the sheets, said container being adapted to receive the associated stack of tissues therein with the bottommost tissue resting upon the upper ends of said inclined portions and having the free end thereof extending through said dispensing opening and below said container for access by a user, the exertion of a withdrawing force on the free end of the bottommost tissue by a user serving to remove said tissue from said container and pull the leading end of the next interleaved tissue through the dispensing opening for access by the user, whereby said sheets may be dispensed one at a time from said container.

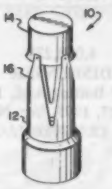
4,058,236

METHOD AND APPARATUS FOR HANDLING AND ORIENTATION OF FRAGILE ARTICLES

Raymond J. Brennan, Emporium, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 12, 1976, Ser. No. 648,269
Int. Cl.[2] B65H *9/00*
U.S. Cl. 221—163 9 Claims

1. An apparatus for handling and orienting fragile, fast warm-up cathodes for cathode ray tubes, said cathodes comprising a two piece unit only one piece of which is magnetic, comprising, in combination: a disoriented supply of said cathodes; vertically arrayed, reciprocating pick-up means associated with said supply and positioned thereover, the terminal portion of said pick-up means which engages said supply being magnetic; means for activating said pick-up means from a delivery zone into engagement with said supply through an apertured stripper means positioned therebetween whereby said pick-up means engages a plurality of said cathodes; means for moving said pick-up means back to said delivery zone



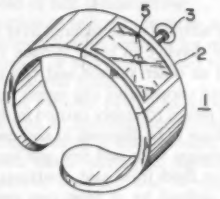
whereby said stripping means is again engaged and all but one of said cathodes is stripped off, said remaining cathode having a particular, desired orientation; and means for removing said cathode from said delivery zone.

4,058,237

PORTABLE SELF-PROTECTIVE DEVICE

Clark Luke, 2210 N. 57 Way, Hollywood, Fla. 33021

Filed Oct. 31, 1975, Ser. No. 627,782
Int. Cl.[2] B67D *5/64*
U.S. Cl. 222—78 2 Claims



1. A portable self-protective device adapted to be worn on the wrist of a person to be protected in the form of a bracelet, comprising a compartment integral with said bracelet, said compartment containing a quantity of protective fluid material under pressure on said compartment, an outlet nozzle for dispensing said protective fluid material in the form of a directionally controlled stream or spray; means in said compartment for selectively controlling the flow of said protective fluid from said compartment to said nozzle, said means comprising an elongated valve body having an outlet port in communication with said nozzle at one end thereof and at least one inlet port intermediate the ends of the body providing communication between the interiors of said compartment and said valve body; a valve means movable to and from said outlet port to control the flow of said protective fluid through said outlet port, said valve means being mounted integrally on the end of a valve rod extending through the interior of said valve body and seating on the upstream side of said outlet port so that said protective fluid material under pressure acts to more firmly seat said valve means on said outlet port, said valve means having a conical surface which seats on and enters into said outlet port, said valve rod extending out of the compartment and having a threaded portion which mates with cooperating threads on the interior surface of said valve body, whereby rotation of said valve rod by a wearer of the bracelet causes linear movement of said valve means to and from said outlet port to control the flow of protective fluid material through said outlet port, and rotary motion with respect to said outlet port to provide a wiping action between the mating surfaces of said outlet port and said valve means, spring biasing means for biasing said valve means to a closed position to prevent the

flow of protective fluid material through said outlet port, control means for rotating said valve rod against the bias of said spring biasing means whereby said control means determines whether protective fluid material is dispensed to protect said person.

4,058,238
DISPENSER
Ronald E. Eckman, 1797 Bolling Ave., Louisville, Ky. 40210
Filed Nov. 17, 1975, Ser. No. 632,265
Int. Cl.[2] G01F *11/26*
U.S. Cl. 222—305 **2 Claims**

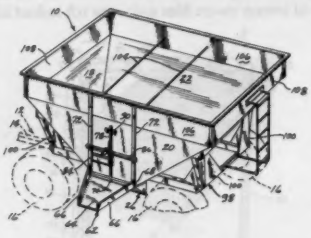
1. An arrangement for delivering measured quantities of fluid material from a container having a cooperative opening including:

a. a cap member adapted to be secured over said opening of said container, having an inner surface exposed to said container and an outer surface said cap member having first and second cooperative cap means openings therein;

b. first chamber means rotatably carried in the inner surface of said cap means to be disposed in said container in communicative relation with said first and second cap openings to receive fluid from said container, said chamber means being defined by at least two spaced, generally parallel, first sidewall means adapted to extend laterally from said cap means where a portion of said first sidewall means are received through said first cap opening, first endwall means extending between said sidewall means along a portion of the perimeter of each, and terminating in a first edge to define a first fluid opening to said first chamber for admission of fluid material from said container to said first chamber and second endwall means pivotably secured to the outer surface of said cap means extending between the portions of said sidewall means extending through said first cap opening where said second endwall means define one side of said first fluid opening and where said second endwall means is moveable from first position covering a portion of said first cap opening to a second position to move a portion of said sidewall means through said first cap opening and wherein said first fluid opening is moved from first position within said container to second position to expose said first fluid opening to the outer surface of said cap means;

c. moveable wall means located within said first chamber extending generally between said sidewall means and having a first edge pivotably secured adjacent the inner surface of said cap means between said first and second cap opening means and extending outwardly therefrom to a sliding edge contacting said first endwall means so that said moveable wall means can be selectively positioned within said first chamber to define a first compartment of selected volume communicating with said first cap opening means and said first fluid opening and a second compartment communicating with said second cap opening means.

4,058,239
GRAVITY FEED BOX
Michael D. Van Mill, Shell Rock, Iowa, assignor to Work Horse Manufacturing Co., Madison, Wis.
Filed Mar. 8, 1976, Ser. No. 664,429
Int. Cl.[2] B65G *11/12, 65/58*
U.S. Cl. 222—462 **6 Claims**



6. A gravity feed box comprising,

a box having a chamber defined by oppositely disposed end walls and one side wall, and a bottom wall which extends from the side opposite said one side wall downwardly and across and beyond the center of said box to the lower end of said one side wall,

said bottom wall including a discharge opening at its lower end,

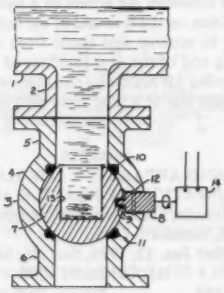
a spout positioned under said discharge opening and oriented to direct material flowing from said chamber towards the center of said box,

a closure gate for opening and closing said discharge opening,

said one side wall including a discharge opening at its lower end and a closure gate being provided for opening and closing said discharge opening in said one side wall, and

a spout being provided under said discharge opening in said one side wall and oriented to direct material flowing from said chamber laterally away from said box.

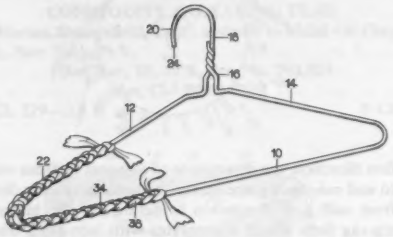
4,058,240
AUTOMATIC DRAIN FOR COMPRESSED AIR SYSTEMS
Philip S. Becker, Erie, Pa., assignor to Valex Inc., Erie, Pa.
Filed Apr. 14, 1976, Ser. No. 677,007
Int. Cl.[2] G01F *11/22*
U.S. Cl. 222—368 **6 Claims**



1. In combination with a compressed air system and the like having a liquid collecting sump under the elevated pressure of the air system, a valve for draining the sump without substantial loss of air comprising a valve body having an inlet connected to receive liquid from the sump under said elevated air pressure and an outlet for said liquid to a lower pressure, a valve member rotatable in the body for blocking flow through

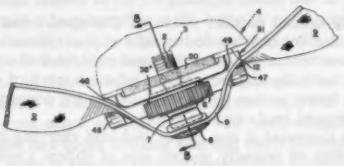
the body in all angular positions of the member, said body having cup means presented to the inlet in one angular position of the member to receive liquid from the inlet and presented to the outlet in another angular position of the member to empty the cup means, and means for continuously rotating the valve member.

4,058,241
COVERED GARMENT HANGER
Helen C. Craig, 6307 Augusta Road, Greenville, S.C. 29605
Filed Sept. 12, 1975, Ser. No. 612,668
Int. Cl.[2] A47J *51/094*
U.S. Cl. 223—98 **4 Claims**



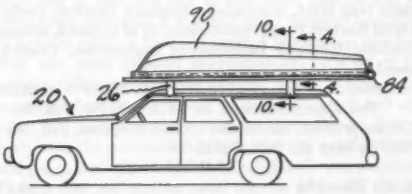
1. A covered garment hanger including a substantially triangular-shaped bar frame comprising:
   a. a horizontal cross bar;
   b. a pair of upwardly converging shoulder bars integral with opposing ends of said cross bar providing a pair of garment supporting shoulders terminating in an inverted Y-shaped neck junction;
   c. an end of one of said shoulder bars extending upwardly to form a suspension hook bar having a shank portion and a substantially U-shaped hook portion;
   d. a semi-elastic fabric strand for being braided over said hanger;
   e. a medial portion of said strand being placed against an end tip of said hook portion to form a first fabric strand on one side of said tip and a second fabric strand on the opposite side of said tip with said fabric strand secured about said tip;
   f. said first fabric strand being initially looped under and then over the hook bar portion and then pulled tightly through the loop thus formed with said second fabric strand being subsequently worked under and then over the hook bar portion and then pulled tightly through the loop thus formed to form a braid over and covering said end tip;
   g. said first fabric strand being then looped under and then over said hanger bar and then pulled tightly through the loop thus formed to form a first series of braided loops laterally adjacent one side of said hanger bar;
   h. said second fabric strand being looped under then over said hanger bar and then pulled tightly through the loop thus formed to form a second series of braided loops laterally adjacent the other side of said hanger bar;
   i. said first and second strands being looped as in paragraphs (g) and (h) to form said braided cover over said entire suspension hook, over one branch of said neck junction downwardly over said shoulder bar, over said cross bar, upwardly over said other shoulder bar and up through said neck junction to entirely cover said garment hanger;
   j. said first and second fabric strands being secured together at said neck junction to finish said braided cover; and
   k. said first and second series of braided loops providing a substantially flat garment supporting surface of wider surface area than said hanger bar portions reducing slipping and creasing of said garments thereon.

4,058,242
CONNECTOR FOR CAMERA HARNESSES
Robert A. Brewer, 15 Castle Park Way, Oakland, Calif. 94611
Filed Aug. 24, 1976, Ser. No. 717,155
Int. Cl.[2] A45F *5/00*; F16B *35/04*
U.S. Cl. 224—5 V **5 Claims**



1. A connector for releasably attaching a camera to a harness, said camera having a threaded screw nut formed in the body and strap lugs adapted for attachment to coupling members on the harness, said harness having a transverse flexible member adapted for wearing across the chest of the wearer, said connector comprising:
   a. a thumb screw member having a threaded shank adapted for threadable connection with said threaded screw nut formed in said camera body member and an enlarged head member adapted for manual turning;
   b. a portion of a snap fastener member connected to said enlarged head of said thumb screw;
   c. a mating portion of said snap fastener member connected to said transverse flexible member for releasable coupling with said portion of said snap fastener member connected to said thumb screw head;
   d. a rigid washer member having an upper and lower face and formed with an opening therethrough for placement in surrounding relation to said threaded shank;
   e. said threaded shank having an unthreaded portion of reduced diameter between said threaded end and said enlarged head portion;
   f. a resilient member attached to the lower face of said washer portion adapted for contact with said camera body;
   g. said opening in said washer member having a dimension greater than said unthreaded portion of said shank and smaller than the threaded portion of said shank;
   h. said rigid washer being formed with an annular area surrounding said opening which is flexible to permit the insertion of said shank through said opening; and
   i. said rigid washer is formed with a pair of slotted openings on opposite sides adapted for releasably receiving said transverse harness strap.

4,058,243
CAR TOP LOAD CARRIER
Leonard E. Tappan, Rte. 3, Box 144, Edwardsburg, Mich. 49112
Filed Apr. 29, 1976, Ser. No. 681,321
Int. Cl.[2] B60R *9/08*
U.S. Cl. 224—42.1 H **6 Claims**



1. A car top load carrier comprising
a rigid elongated support frame having multiple prefabri-

cated sections, means for detachably and telescopically connecting adjacent said frame sections in longitudinal alignment and end abutment,

means for removably mounting at least some of said support frame sections on the top of a vehicle and cooperating with said frame connecting means to position said frame sections in frame-defining assembled load-bearing relation,

laterally spaced parallel tracks of C-shaped cross section attached to each section of said support frame at their bottom bent marginal sections and each track abutting and longitudinally aligned with an adjacent track of an adjacent frame section when said sections are connected,

an elongated load carrying member,

wheels journaled at one end of said load carrying member,

a plurality of laterally spaced sets of rollers journaled at spaced intervals along the length of said load carrying member and adapted to traverse said tracks, said tracks retaining said rollers against release transversely from said support frame, and

means for securing said load carrying member in operative position on said support frame.

4,058,244

AIR CUSHION NOZZLE

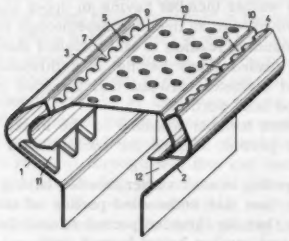
Hilmar Vits, Leichlingen, Germany, assignor to Vits-Maschinenbau GmbH, Langenfeld, Germany

Filed Feb. 17, 1977, Ser. No. 769,717

Claims priority, application Germany, Mar. 27, 1976, 2613135

Int. Cl.[2] B65H *17/32*

U.S. Cl. 226—97 **10 Claims**



1. An air cushion nozzle for a device for conveying a web in suspension on an air cushion, said nozzle comprising a housing including two opposed walls with bent legs thereon, said legs having spaced recesses therein forming tongues between said recesses, barfle plate means supported on said housing for supporting each leg, said legs being biased, so that said tongues on said legs being in contact with said baffle plate means to form two rows of discharge outlets for jets of air at said recesses extending towards one another in parallel for form the air cushion.

4,058,245

YARN CONTROL MECHANISMS AND THE LIKE

Francis Neil Hurt, Nottingham; Reginald Theaker, Derby, and David Herbert Plant, Nottingham, all of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 553,311, Feb. 26, 1975, abandoned. This application Sept. 30, 1976, Ser. No. 728,734

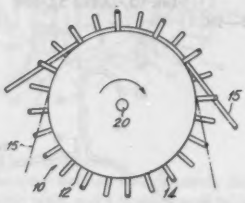
Claims priority, application United Kingdom, Feb. 26, 1974, 08587/74; May 21, 1974, 22763/74

Int. Cl.[2] B65H *17/22*

U.S. Cl. 226—174 **10 Claims**

1. A rotatable control system for yarn or like material comprising in combination:

an element having an outer cylindrical peripheral surface extending substantially parallel to said element's axis of rotation, said surface being accessible to the yarn to make continuous contact therewith for the length of yarn along the surface, said surface having a number of discrete guide surfaces, at least in part, staggered about an imaginary reference plane which is perpendicular to said axis of rotation of said element, alternate ones of said number of said discrete guide surfaces providing a first set of such surfaces each of which bend only in a first direction relative to said reference plane, and the intervening ones of said guide surfaces providing a second set of said surfaces, each of which bends only in the opposite direction to said



first direction, the divergence of adjacent surfaces relative to said reference plane increasing with increasing distance from said axis of rotation to define, for the material, a zig-zag path which degenerates with increasing distance from said axis of rotation of said element into a line path lying in said reference plane of said element; and

control means for varying the distance of the yarn from said element axis of rotation to thereby vary the tension applied by said element as it is rotated including first and second guide members pivotably mounted about said axis of rotation and each mounting means for guiding passage of said yarn.

4,058,246

SUCTION PIPETTE AND METHOD OF MANUFACTURE FOR RECEIVING OF SEMICONDUCTOR CRYSTAL PLATES

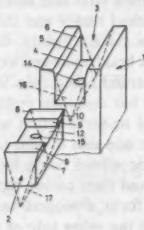
Karl Nicklaus, Steinhausen, Switzerland, assignor to Esec Sales S.A., Zug, Switzerland

Filed Oct. 13, 1976, Ser. No. 732,103

Claims priority, application Switzerland, Oct. 16, 1975, 13454/75

Int. Cl.[2] H01L *21/68*; B22F *7/06*

U.S. Cl. 228—121 **7 Claims**



1. A method of manufacturing a suction pipette of sinterable material for receiving rectangular, including quadratic semiconductor crystal plates, the pipette being formed with a rectangular recess having a floor, walls defining the recess narrowing towards the floor, and an evacuation channel communicating with the floor, comprising the steps of:

inserting a binder into the material to be sintered; fabricating first and second parts for assembly of the pipette, the first part being formed with an open channel and having first and second sidewalls defining the open channel, the second part being insertable into the first part having first and

second cam-shaped end-projections formed with first and second inner walls, respectively, and first and second outer walls for making contact with the first and second sidewalls upon insertion of the second part into the first part;

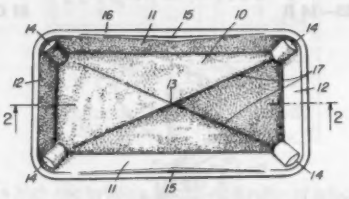
grinding the sidewalls of the first part within the region of the open channel and the outer walls of the projections to a predetermined tapered angle for at least a first portion of the first and second sidewalls, and the first and second outer walls to fittingly abut each other, respectively, upon the insertion of the second part into the first part, the inner walls and at least a second portion of the first and second sidewalls defining the recess; and heat treating or sintering the first and second parts upon insertion of the second part into the first part for uniting the first and second parts by diffusion of the binder within the sinterable material.

4,058,247

COMMODITY PACKAGING TRAY

John Florian, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 15, 1976, Ser. No. 741,913
Int. Cl.² B65D *1/34*
U.S. Cl. 229—2.5 R **8 Claims**



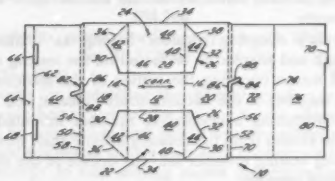
1. A tray of substantially rectangular shape adapted for packaging of an edible product, said tray comprising: a bottom product-supporting wall and integral side walls upstanding from said bottom wall; said side walls including two oppositely disposed longer side walls; said bottom wall being elevated at its center portion to above the horizontal plane described by the bottoms of the four corners of said tray; said bottom product-supporting wall being depressible to said horizontal plane described by the bottoms of said four corners of said tray when said product is placed on said elevated center portion of the product-supporting wall; and each of said two longer side walls being flexible inwardly upon depression of said bottom product-supporting wall.

4,058,248

PRODUCE TRAY

James Michael Smith McArdle, Stratford, Canada, assignor to Domtar Limited, Montreal, Canada

Filed June 30, 1976, Ser. No. 701,367
Int. Cl.² B65D *5/20*
U.S. Cl. 229—30 **10 Claims**



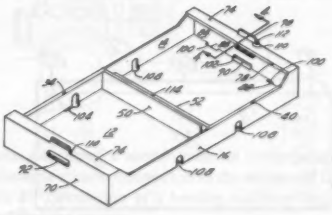
1. A tray comprising a bottom panel, side walls foldably connected to opposite sides of said panel via a pair of substantially parallel side fold lines, a pair of end wall forming panels, each of said end wall forming panels being defined in said bottom panel and said side walls by a line of weakness extending across said bottom panel and partway into each of said side walls, and a first pair of fold lines extending one from each end of said line of weakness toward a junction formed with the projection of the adjacent of said side fold lines, a second pair of fold lines extending one from said line of weakness toward each of said junctions to form in each of said end wall forming panels, an end wall and a pair of side connecting walls, said first and second pairs of fold lines being symmetrically arranged with respect to the longitudinal centre line of the tray, each of said side connecting walls being in overlying face-to-face relationship with its adjacent of said side walls, a reinforcing side panel foldably connected to each of said side walls and positioned in face-to-face overlying relationship to the side wall to which it is connected and its adjacent said side connecting wall, end edges at each end of said reinforcing side wall panels, said end edges abutting said end walls thereby to hold said end walls in erected position, one of said reinforcing side wall panels having a flap foldably connected to its free edge and the other of said reinforcing side wall panels having a bottom wall foldably connected to its free end, said foldable connection between said side walls and said reinforcing side wall panels and between said one reinforcing side wall panel and said flap and said other reinforcing side wall panel and said bottom wall being substantially parallel to said pair of fold lines connecting said side walls with said bottom panel, releasable means to lock said bottom wall in face-to-face relationship with said bottom panel and said reinforcing side wall panels in position relative to said side walls, said side connecting walls and said end walls thereby to form the sole means for holding said tray in erected position.

4,058,249

STACKING TRAY

Stanley Edward Buck, Montreal, Canada, assignor to Domtar Limited, Montreal, Canada

Filed Oct. 7, 1976, Ser. No. 730,374
Int. Cl.² B65D *5/22*
U.S. Cl. 229—34 HW **4 Claims**



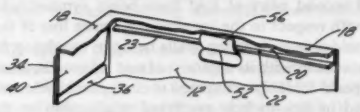
1. A blank and tray formed therefrom comprising a bottom wall, side walls foldably connected along opposite sides of said bottom wall by a first pair of substantially parallel fold lines, and flaps connected to opposite ends of each of said side walls by fold lines substantially perpendicular to said first pair of fold lines, end wall structures foldably connected to opposite ends of said bottom wall by a second pair of fold lines substantially perpendicular to said first pair of fold lines, each of said end wall structures including a first end panel foldably connected to said bottom panel, a first top panel, a second top panel and a second end panel foldably interconnected by a set of fold lines substantially perpendicular to said first set of fold lines, a nesting panel formed from said second top panel and connected to said second end panel, a slot through said first top panel adjacent the connection of said first top panel with said first end panel, said slot and said nesting panel being positioned in a manner that said nesting panel may be projected through said slot when said blank is erected to form said tray.

4,058,250

REINFORCED SIDE CARRY CARTON

Allardus A. Akkerman, Calgary, Canada, assignor to Domtar Limited, Montreal, Canada

Filed May 4, 1976, Ser. No. 682,997
Int. Cl.[2] B65D 5/46, 25/22
U.S. Cl. 229—52 B 8 Claims



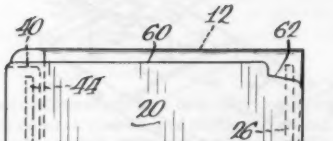
1. A blank for forming a side carry carton comprising a front wall, bottom wall, rear wall, top wall, and manufacturer's joint forming flap interconnected by a set of substantially parallel fold lines, an extension of said manufacturer's joint forming flap connected to said flap by a first fold line substantially parallel to said set of fold lines, said first fold line on said extension inhibiting folding of said extension inward of a finished carbon made from said blank through more than approximately 90° relative to said flap, a handle panel formed in said front wall by a substantially U-shaped slit and a second fold line interconnecting the opposite ends of said U-shaped slit, said second fold line being substantially parallel to said set of fold lines and being spaced from the top edge of said front panel by a distance to permit said first and second fold lines to be substantially in alignment when said carton is constructed, said first fold line on said extension and said extension extending laterally from opposite ends of said second fold line.

4,058,251

FOLDED MONEY PACK ENVELOPE

Mayne B. Stevenson, Park Ridge, Ill., assignor to Arvey Corporation, Chicago, Ill.

Filed Nov. 16, 1976, Ser. No. 742,082
The portion of the term of this patent subsequent to July 27, 1993, has been disclaimed.
Int. Cl.[2] B65D 27/08
U.S. Cl. 229—72 4 Claims



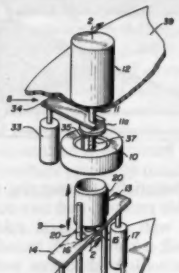
1. A sheet adapted to be folded to produce an envelope, said sheet being generally rectangular in plan view and having four lateral edges, said sheet having first and second spaced parallel fold lines dividing said sheet into a central panel portion and first and second panel portions on opposite sides of said central panel portion, said central panel portion having a flat planar edge on one end thereof, said central panel portion having a further fold line on an end opposite of said flat planar edge and extending parallel thereto to produce a tab, said first panel portion having one flat edge defining an extension of said flat planar edge and being inwardly angularly related thereto, said first panel portion having a second flat edge offset inwardly from said further fold line in said central panel portion and extending generally parallel thereto, said tab having an outer lateral flat edge spaced from said further fold line by a dimension that is less than the spacing between the second flat edge of said first panel portion and said further fold line in said central panel portion, one of said central and first panel portions having a first area of adhesive on a surface thereof adjacent said flat planar edge and a contact surface of one of said tab and said second panel portion having a second area of adhesive between said further fold line and said outer lateral flat edge of said tab, said second panel portion having opposite ends extending parallel to each other and respectively defining extensions of said flat planar edge and said further fold line of said central panel portion so that said tab can be folded along said further fold line, said sheet can be folded along said first fold line to place said first panel portion in overlapping relation with said central panel portion and subsequently along said second fold line to have said second panel portion in overlapping relation with said first panel portion while said tab is in overlapping relation with said second panel portion.

4,058,252

AUTOMATIC SAMPLE PROCESSING APPARATUS

Melvin Williams, 840 Elmwood, Evanston, Ill. 60202

Continuation-in-part of Ser. No. 617,236, Sept. 26, 1975, abandoned, which is a continuation of Ser. No. 487,317, July 10, 1974, Pat. No. 3,908,893, which is a division of Ser. No. 351,631, April 16, 1973, Pat. No. 3,838,809. This application Oct. 23, 1975, Ser. No. 625,029
Int. Cl.[2] B04B 15/02
U.S. Cl. 233—14 R 41 Claims



1. Apparatus for separating a sample into its lighter and heavier components comprising:

means including a hollow shaft;

means comprising a centrifuge drum having an interior chamber coupled to the shaft;

means for rotating the shaft about its longitudinal axis to spin the centrifuge drum and cause the heavier components and the lighter components to separate in the interior chamber;

means comprising a vacuum source;

means including a tube extending from the interior centrifuge drum chamber through the hollow shaft;

a seating member mounted on the hollow shaft to rotate therewith;

a stationary coupling member having an orifice therethrough and adapted to be seated on the seating member;

external means coupling the orifice of the stationary coupling member to the vacuum source means; and

means comprising a needle-like member mounted on the tube to extend from the rotating hollow shaft through the rotating seating member into the orifice of the stationary coupling member,

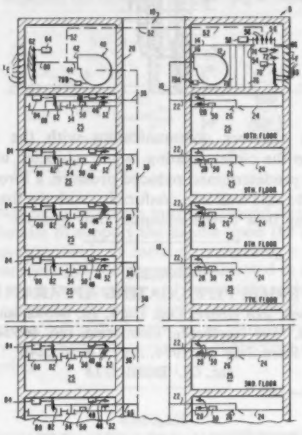
the separated sample component being aspirated in the tube through the hollow rotating shaft and the needle-like member into the stationary coupling member orifice and therethrough into the external means responsive to the vacuum source means.

4,058,253

METHOD AND APPARATUS FOR CONSERVATION OF ENERGY AND CONTAINMENT AND EVACUATION OF SMOKE IN A HIGH RISE BUILDING

Michael E. Munk, Port Chester, and Louis F. Bromberg, Spring Valley, both of N.Y., assignors to Michael E. Munk, Port Chester, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,885
Int. Cl.[2] F24F 7/06, 11/00
U.S. Cl. 236—46 R 8 Claims



7. In a high rise building having a plurality of selected locations, the method of normally supplying conditioned air to said building through a plurality of supply and return passageways communicating with a plurality of selected locations through corresponding supply and return registers in a manner to reduce and conserve the consumption of air conditioning energy, said method comprising normally providing conditioned air to and removing air from a pre-determined number of selected locations at a rate which is a pre-determined reduced percentage of the full capacity of said air conditioning system, simultaneously providing conditioned air to and removing air from the remaining number of said selected locations at said full rate, and cyclically varying the specific selected locations being supplied with conditioned air and having air removed therefrom at said reduced pre-determined percentage of said full rate.

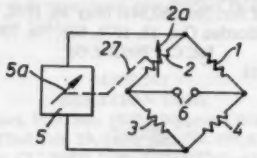
4,058,254

TEMPERATURE-MONITORING AND CONTROL SYSTEM

Knud Julius Hallgreen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation-in-part of Ser. No. 510,046, Sept. 27, 1974, abandoned, which is a continuation of Ser. No. 793,505, Jan. 23, 1969, abandoned. This application July 11, 1975, Ser. No. 594,964
Claims priority, application Germany, Jan. 26, 1968, 1753205
Int. Cl.[2] G05D 23/24
U.S. Cl. 236—68 B 5 Claims

1. A system for controlling the thermal comfort in a space used by living beings comprising sensing means adapted to be influenced by convection heat and to receive and deliver radiant heat, first adjustable setting means for continuously supplying heat energy to said sensing means corresponding to an expected activity level so that its surface temperature is above ambient temperature, first indicator means for indicating the temperature of said sensing means, second adjustable setting means for selecting a desired comfort temperature setting, second indicator means associated with said second adjustable setting means for indicating said desired comfort temperature setting, and means for the common setting of said first and second setting means so that an increase in the heat energy supplied to said sensing means corresponds to a lowering of



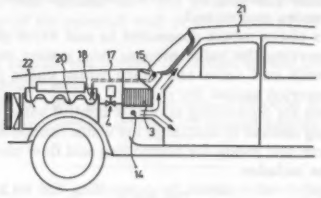
said desired comfort temperature setting and vice versa; said first and second indicating means being subject to comparison to control the thermal input to said space.

4,058,255

HEATER CONTROL FOR A MOTOR VEHICLE

Ernst Linder, Muhlacker; Wilhelm Hertfelder, Steinenbronn; Eberhard Schnaibel, Hemmingen, and Erich Junginger, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 2, 1976, Ser. No. 702,087
Claims priority, application Germany, July 11, 1975, 2531015; Apr. 9, 1975, 2615476
Int. Cl.[2] B60H 1/02
U.S. Cl. 237—12.3 B 16 Claims



1. A heating system for motor vehicles comprising:

heat exchanger means, connected to the engine of the motor vehicle for circulation of a heating medium through said heat exchanger means;

valve means disposed between said engine and said heat exchanger means for controlling the flow rate of said heating medium through said heat exchanger;

first temperature sensor means, for generating a first electrical signal dependent on the air temperature in the passenger compartment of said motor vehicle;

second temperature sensor means, for generating a second electrical signal dependent on the air temperature adjacent said heat exchanger means;

a set point generator, for generating an electrical set-point signal; and

controller means, for receiving said first and second electrical signals and said set-point signal and for generating an output control signal for actuating said valve means; wherein said first and second temperature sensor means are connected in series and the change in signal from said first sensor means is greater than the change in signal from said second sensor means for the same change in temperature.

4,058,256

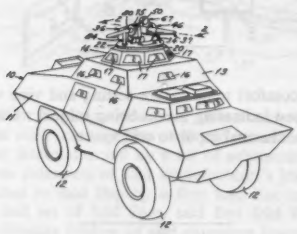
WATER CANNON

James Charles Hobson, St. Clair Shores, and Arthur John Wroble, Grosse Pointe, both of Mich., assignors to Cadillac Gage Company, Warren, Mich.

Continuation of Ser. No. 582,541, May 30, 1975, abandoned. This application Oct. 18, 1976, Ser. No. 733,667

Int. Cl.[2] B05B *1/08*

U.S. Cl. 239—101 **10 Claims**



1. In a water cannon for use in controlling large crowds of unruly people, the combination comprising:

A. a cannon body having a discharge nozzle means;

B. a pressurized water supply means connected to said cannon body for supplying water under pressure thereto;

C. a main stage flow control valve means for controlling the discharge of discrete water projectiles in a pulsing fashion from said nozzle means; said main stage flow control valve means includes:

1. a valve plunger axially disposed in said cannon body;

2. a floating valve seat mounted in said cannon body on which said valve plunger seats when the cannon is inoperative; and

3. means for normally biasing the valve plunger into seating engagement with said valve seat; said means for normally biasing the valve plunger includes:

a. spring means; and

b. a piston means connected to said valve plunger for moving the valve plunger into seating engagement with said valve seat when water under pressure is exerted against the piston;

D. means for controlling said flow control valve means in a pulsing manner to discharge the water cannon in an on-off fashion; said means for controlling said flow control valve means includes:

1. a pilot valve means for controlling the water pressure exerted against said piston;

2. a solenoid means for operating said pilot valve means; and

3. an electronic control means for operating said solenoid means in a pulsing manner.

4,058,257

IRRIGATION EMITTER

Lloyd Spencer, 220 Patrician Way, Pasadena, Calif. 91105

Continuation of Ser. No. 529,712, Dec. 5, 1974, abandoned. This application July 9, 1976, Ser. No. 704,048

Int. Cl.[2] B05B *1/32*

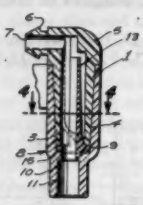
U.S. Cl. 239—107 **31 Claims**

1. An irrigation emitter comprising:

a. a housing forming an enclosure having opposed first and second fixed walls, an inlet at one end thereof and an outlet at the opposite end thereof, the first wall having a longitudinally extending minimum flow groove communicating with the outlet;

b. a longitudinally extending resilient wall interposed between the first and second walls and having at least one free lateral edge in contact with the first wall at one side of the minimum flow groove, the resilient wall being yieldably and progressively biased away from the first fixed wall between the free lateral edge and minimum flow groove to form with the first fixed wall a flush flow passage including the minimum flow groove and communicating between the inlet and outlet;

c. the flexible wall forming with the second fixed wall, a



pressure chamber communicating with the inlet and closed to the outlet creating, when subjected to pressure above a predetermined reduced pressure, a force deforming the flexible wall into conformity with the first wall and restricting flow to the minimum flow groove.

4,058,258

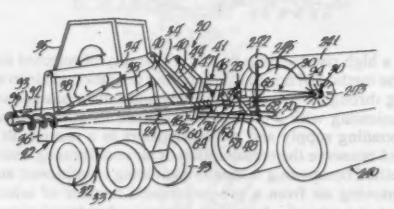
INTERIOR PIPE COATING APPARATUS

Paul W. Rosen, 218 Grove, Oak Park, Ill. 60302, and Cary A. Gunderson, 7103 Northcote, Hammond, Ind. 46324

Filed July 29, 1974, Ser. No. 492,446

Int. Cl.[2] B05B *3/18*

U.S. Cl. 239—165 **9 Claims**



1. In apparatus for coating the interior surface of a pipe or the like, in combination, a mobile vehicle, a traveling boom reciprocally movable on said vehicle and adapted to be moved into and out of the pipe, adjustment means on said vehicle for varying the relative position of said traveling boom and bringing it into alignment with the longitudinal axis of the pipe, means on said vehicle for reciprocating and supporting said traveling boom for movement into and out of the pipe, said means for supporting said traveling boom being adapted to be always spaced from the interior surface of the pipe, and spraying means secured adjacent an end of said traveling boom, said reciprocating and supporting means comprising flexible means secured to opposite ends of said traveling boom, and a driven pulley rotatably supported on said vehicle, said flexible means having a mediate portion wrapping around said pulley, whereby rotation of said pulley drives said flexible means and said traveling boom, and the interior surface of the pipe may be coated without any portion of said apparatus touching the inner surface of the pipe.

4,058,259

HANDLE AND STAND FOR PRESSURE SPRAYING

Socrates J. Schantz, Marine, Ill., assignor to John S. Schantz and Raymond G. Schantz, both of Marine, Ill., part interest to each

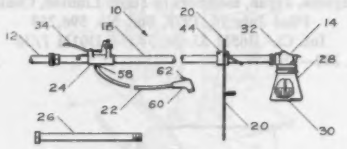
Filed June 23, 1976, Ser. No. 698,946

Int. Cl.[2] B05B *7/30*

U.S. Cl. 239—276 **5 Claims**

1. A remote control handle for a pressure sprayer cannister

having means for mixing a concentrated spray solution with an external liquid under pressure, said handle comprising an elongated rigid tubular member of at least about an arm's length, means for connecting a first end of said tubular handle to the cannister and a second end to a flexible hose for providing liquid under pressure, a normally closed valve adjacent the second end for regulating the flow of liquid to the cannister and a pivotable stand, said stand being pivotably connected to the handle adjacent the cannister and having a rod-like free end



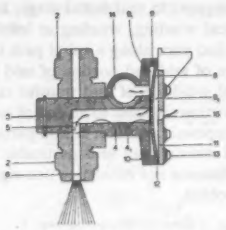
member adapted to be driven into the ground directly underneath the handle to support the handle upon the ground in a triangular position said end member comprising a pair of substantially parallel rigid rod elements connected to one another and spaced apart for receiving and supporting said handle, and which are adapted to be stuck in the ground, said stand being pivotally connected to the handle by an element having a pair of inwardly turned ends for pivotally supporting said tubular handle member.

4,058,260

SELECTABLE, ANTI-LEAK, NOZZLE-HOLDER

Maurice Cyril Lestradet, 291 rue du Marechal Delattre de Tassigny, 51230 Fere Champenoise, France

Filed Sept. 22, 1975, Ser. No. 615,546
Claims priority, application France, Nov. 7, 1974, 74.36938
Int. Cl.² B05B *1/16*
U.S. Cl. 239—394 **11 Claims**



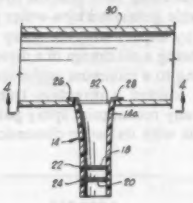
1. A nozzle device for mounting on a vehicle comprising:
an annular body having a plurality of radial passages, a plurality of arms each being provided with a spray nozzle, means for radially interengaging said arms about the periphery of said annular body, each in alignment with a radial passage,
said annular body having an axial opening to receive a plug, said plug having an axial passageway extending longitudinally between opposite ends of the plug and connecting to a radial duct at one end of the plug,
said duct and annular body arranged for selective alignment of said duct with one of said radial passages,
said annular body being mounted rotatably with respect to the plug whereby selection of a given nozzle type is effected by angular displacement of said annular body,
said plug having at its other end an anti-drip means comprising a body at the other end of the core forming in part a dispensing chamber and a diaphragm supported across the dispensing chamber and deflectable to cover at least said axial passageway to stopper it,
said plug having at its other end means defining an inlet duct integral with the plug and a port extending between the inlet duct and dispensing chamber, said inlet duct communicating with the port and extending transversely to the axial passageway in the plug, said inlet duct having opposite open ends permitting inlet feeding from the holder to an adjacent holder.

4,058,261

AERATION TUBE

Gary M. Pollart, P.O. Box 1558, Guymon, Okla. 73942

Filed Feb. 19, 1976, Ser. No. 659,424
Int. Cl.² B05B *1/14, 15/00*; F16L *41/02*
U.S. Cl. 239—542 **8 Claims**



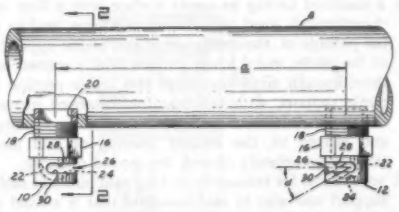
1. In combination:
an irrigation pipe for conducting irrigation water;
means for discharging water from the interior of the pipe to the ground through an opening in the wall of the pipe; and
a tubular aeration device mounted adjacent the side of the pipe and positioned to communicate its interior with said opening in the wall of the pipe, said device comprising:
a shapeable, manually deformable tubular first end portion of selectively variable cross-sectional configuration;
a plurality of retainer hooks secured to said tubular first end portion, and including portions projecting normal to the axis of said tubular first end portion and radially outwardly of the external wall of said tubular first end portion;
a second tubular end portion connected to said first tubular end portion; and
a plurality of rigid diffusion screens positioned in, and extending transversely across, said second tubular end portion.

4,058,262

FLUID SPRAY FOR GENERATING RECTANGULAR COVERAGE

Richard C. Burnham, Greenfield, Mass., assignor to Bete Fog Nozzle Inc., Greenfield, Mass.

Filed Feb. 13, 1976, Ser. No. 658,070
Int. Cl.² B05B *1/26*
U.S. Cl. 239—545 **6 Claims**



1. Spray apparatus for evaporational cooling of tubular media, the upper surfaces of which define a generally planar surface comprising a conduit carrying liquid under pressure and disposed above and generally parallel to said surface, at least one pair of nozzles depending in axially spaced relation from said conduit, each nozzle having an internal spherical end wall surface and an orifice opening through said spherical end wall surface and extending over an obtuse angle, said orifice

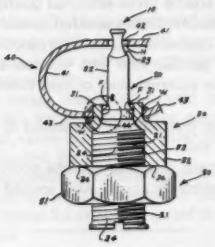
being defined by upper and lower edges spaced apart from three-sixteenths inch to three-fourths inch, said orifice intersecting said spherical surface to provide a spherical surface below said orifice of about five-eighths to three-fourth the surface area of a hemisphere of the same radius as said spherical surface, each nozzle generating an arcuate spray of liquid droplets in generally parallel, superposed spaced relation to said planar surface of said tubular media, said nozzles being disposed in axially spaced relation on said conduit with the orifice of one nozzle opening directly toward the orifice of the other nozzle with the geometric center of each spray in general alignment with the axis of said conduit, the spacing between said pair of nozzles being such that the droplet velocity of the spray of each nozzle generated by a water pressure of 0.5 to 10 psi is attenuated by impact with the spray of the other nozzle, said attenuation being a maximum in a direction parallel to said axis and decreasing to a minimum as the spray angle from each nozzle increases toward a direction transverse to said axis whereby a generally rectangular spray pattern is deposited on said tubular media with its major dimension transverse to said conduit.

4,058,263

ADJUSTABLE PINTLE SPRAY MANIFOLD ASSEMBLY

Donald R. Trenschel, Lake Park, and Frederick G. Eltel, North Palm Beach, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 16, 1976, Ser. No. 714,414
Int. Cl.[2] B05B *1/30, 1/14*
U.S. Cl. 239—551 **6 Claims**



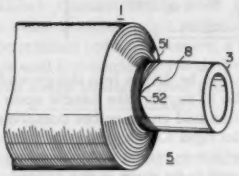
1. An adjustable pintle spray manifold assembly, comprising:
a. a pintle having a lower portion, and an upper portion with an end shaped in a converging-diverging configuration;
b. a support for said pintle, with said pintle support surrounding, and removably connected to, the lower portion of said pintle, and with said pintle support having an upper portion and a lower portion;
c. a manifold having an upper surface with a first opening therethrough sized and shaped to accept, and to permit the passage of, the configurated end of the upper portion of the pintle, and a lower surface with a second opening therethrough sized to accept the upper portion of the pintle support, with said manifold disposed surrounding the upper portion of said pintle support protruding into, and affixed to, the second opening of said manifold, thereby completely closing the second opening;
d. and, means for releasably locking said pintle to said pintle support and also to said manifold that is affixed to said pintle support;
whereby said pintle may be moved upwardly, so that the configurated end of the upper portion of the pintle protrudes through the first opening in the upper surface of said manifold, thereby forming a variable sized annular-shaped orifice between the first opening in the manifold and the configurated end of the pintle, whereby a desired quantity, and rate of spray of a fluid through the variable sized annular-shaped orifice may be easily attained and maintainted, without further adjustment, after said pintle end has once been adjusted.

4,058,264

YARN WOUND PACKAGE PROVIDED WITH A TRANSFER TAIL WIND AND METHOD FOR FORMING THE TRANSFER TAIL WIND

Kohei Kawashima; Keiji Ikeno, and Hajime Nakanishi, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed July 16, 1975, Ser. No. 596,213
Int. Cl.[2] B65H *55/04, 54/34;* D01H *1/38*
U.S. Cl. 242—18 PW **2 Claims**



1. A winding method for forming a yarn package from a supplied yarn on a cylindrical bobbin comprising a normal winding portion and a transfer tail wind portion provided with a plurality of windings spirally formed on said bobbin at an end portion thereof adjacent to said normal winding portion, comprising positively leading a major length of said supplied yarn about a spiral path substantially perpendicular to the axis of said bobbin to form a helical winding, axially displacing a minor portion of at least one turn of said supplied yarn toward said normal winding portion, along a substantially V-shaped path to and from a particular portion of said end portion of said bobbin at an initial stage of forming said transfer tail winding portion and subsequent to said initial stage, and without disturbing said helical winding, winding at least one additional turn of said supplied yarn along a spiral path intersecting said particular portion of said end portion of said bobbin, at least two of said sprial windings of said transfer tail wind portion wound on said portion adjacent to an end of said bobbin being formed in superimposed condition at said particular portion of said bobbin, and overlapping said particular portion over a circumferential distance not exceeding one-eighth the circumference of said bobbin.

4,058,265

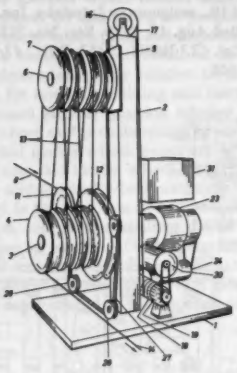
CABLE MAGAZINE

Per Olov Hedlund, Norsborg, and Lars Olof Hertsius, Bromma, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 30, 1976, Ser. No. 682,094
Claims priority, application Sweden, May 27, 1975, 7506065
Int. Cl.[2] B65H *51/20*
U.S. Cl. 242—47.01 **3 Claims**

1. In a cable magazine comprising a first shaft and a second shaft spaced parallelly from said first shaft, said first shaft having rotatably mounted thereabout a plurality of pulleys and said second shaft also having rotatably mounted thereabout a plurality of pulleys, said second shaft and its associated plurality of pulleys being movable relative to said first shaft and its associated plurality of pulleys to thereby vary the distance between said shafts in accordance with the amount of cable being stored in said magazine, the improvement comprising: a grooved pulling wheel affixed to said first shaft for pulling cable into said cable magazine, and driving means connected to said first shaft for rotating said first shaft and said pulling wheel affixed thereto, said pulling wheel being affixed to said first

shaft such that said plurality of pulleys of said first shaft are all positioned on one side of said pulling wheel, whereby loops of



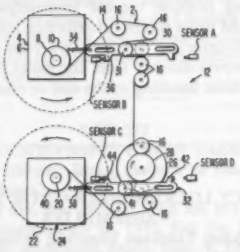
cable are formed between the plurality of pulleys on said first shaft and the plurality of loops on said second shaft.

4,058,266

STRIP LENGTH MONITORING APPARATUS

Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 15, 1976, Ser. No. 723,383
Int. Cl.² B65H *75/00, 61/00;* G01B *5/04*
U.S. Cl. 242—54 R **18 Claims**



1. An apparatus for monitoring the length of a continuous strip of material, said apparatus comprising:

a supply means for supplying the strip, said supply means including a rotatable shaft adapted for retaining a roll of the strip and for rotatably dispensing a predetermined length of the strip during a given rotation;

capstan drive means for receiving the dispensed portion of the strip from said shaft and for incrementally moving the strip the predetermined length in steps; and

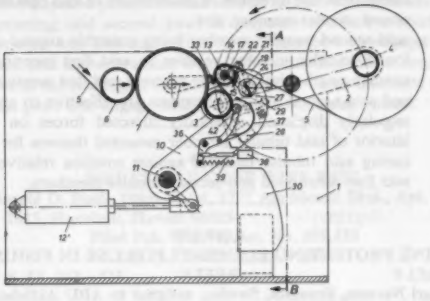
monitoring means for monitoring the length of the strip remaining on the shaft after said rotation by measuring the angular displacement of said shaft after said rotation, by measuring the predetermined length of the dispensed portion, and by correlating said angular displacement and said predetermined length.

4,058,267

WEB SPOOLING MACHINE

Wilhelm Schüttler, Buchenwinkel, Germany, assignor to Maschinenfabrik Stahlkontor Weser Lenze KG, Aerzen, Germany

Filed July 30, 1976, Ser. No. 710,113
Claims priority, application Germany, Aug. 2, 1975, 2534588
Int. Cl.² B65H *19/20*
U.S. Cl. 242—56 A **5 Claims**



1. In an apparatus for spooling webs which includes

a base;

spool holding means pivotably attached to said base for holding and for orienting at least one spool relative to said base;

roller means, attached to arms pivoting on said base for engaging and displacing a web being wound up on one of said spools; the improvement comprising:

cutter means pivotably attached to said shaft supporting said roller;

said guide roller supported adjacent to the termini of said arms comprising a framework;

energy storage means carried by said swivelable framework in proximity to said guide roller for powering the pivoting of said cutter means; and

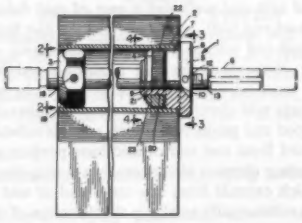
pivotable anvil means for cooperating with said cutter means to sever said web.

4,058,268

SELF-LOCKING SUPPORT FOR TUBULAR MEMBERS

Ralph P. Puccetti, Oak Park, and King L. Klopfenstein, Prospect Heights, both of Ill., assignors to Triangle Package Machinery Company, Chicago, Ill.

Filed Sept. 27, 1976, Ser. No. 726,623
Int. Cl.² B65H *75/24*
U.S. Cl. 242—72 R **8 Claims**



1. A support for rotatably supporting a tubular member comprising

a. an elongated shaft,

b. an annular member mounted on and extending around said shaft in eccentric relation thereto,

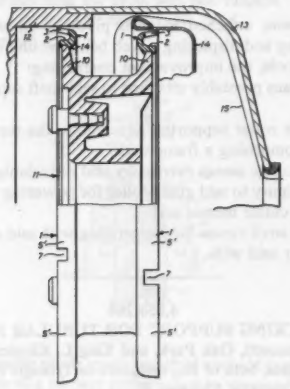
c. a second annular member mounted on and extending around said shaft in eccentric relation thereto, and
d. a third annular member mounted on and extending around said shaft,
e. said annular members being of smaller outside diameter than the inside diameter of such a tubular member and being insertable into said tubular member,
f. a fourth annular member mounted on said shaft for rotation therearound and eccentric thereto in a direction different from the direction of eccentricity of said first mentioned annular member, and
g. said second annular member being rotatable around said fourth annular member relative to said first mentioned annular member into position wherein said first mentioned and said second annular members are effective to apply angularly displaced outwardly directed forces on the interior of said tubular member mounted thereon for securing said tubular member against rotation relative to said first mentioned and second annular members.

4,058,269

LINE PROTECTING ELEMENTS FOR USE IN FISHING REELS

Karl Nurmse, Svangsta, Sweden, assignor to ABU Aktiebolag, Svangstu, Sweden

Filed Nov. 4, 1974, Ser. No. 520,420
Claims priority, application Sweden, Nov. 8, 1973, 7315147
Int. Cl.[2] A01K *89/01*
U.S. Cl. 242—84.1 K **4 Claims**



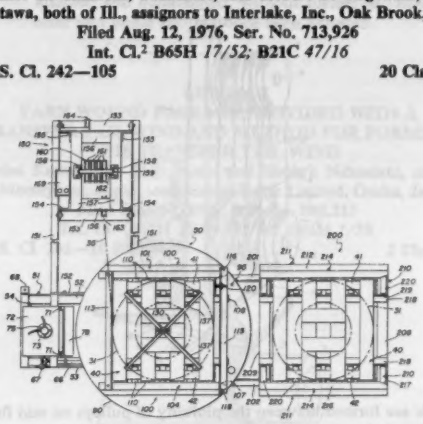
1. A ring-shaped line protecting element comprising a piece of elastic material, a line spool in a fishing reel having said elastic material mounted on a circular rim of an end wall of said line spool to cover at least partially a circular space between said rim of said end wall and a part of said fishing reel surrounding said end wall, and to prevent the line from cutting in between said end wall and said part, said elastic material line protecting element comprising a ring-shaped base portion having an inner peripheral surface shaped to be supported by and to engage said circular rim, an outer peripheral surface and a ring-shaped end projection which extends substantially radially outward from one end of said base portion wherein said line protecting element also comprises a ring-shaped resilient flange which extends from one outer end of said ring-shaped projection substantially axially in the direction of the other end of said base portion in radially spaced relation thereto, said substantially axially extending flange spanning the gap between said spool flange and said surrounding part of the fishing reel and having at least an outer edge portion thereof slitted into a ring of substantially axially extending resilient segments for contacting said surrounding part with a light contacting pressure and low friction.

4,058,270

STRAP DISPENSING SYSTEM

James R. Simmons, Frankfort, and Robert P. Rogowski, Ottawa, both of Ill., assignors to Interlake, Inc., Oak Brook, Ill.

Filed Aug. 12, 1976, Ser. No. 713,926
Int. Cl.[2] B65H *17/52;* **B21C** *47/16*
U.S. Cl. 242—105 **20 Claims**



1. Apparatus for dispensing a continuous strip of strapping material from a heavy coil thereof supported on and held against horizontal movement with respect to a pallet having a pair of spaced-apart feet depending therefrom with the axis of the coil disposed substantially vertically, said apparatus comprising a substantially horizontal turntable mounted for rotation about a substantially vertical axis and having a pair of elongated laterally spaced-apart track assemblies thereon, said turntable being adapted for receiving the pallet thereon in a dispensing position with the pallet feet respectively received in said track assemblies and with the coil disposed substantially coaxially with said turntable, said track assemblies being respectively engageable with the pallet feet for preventing horizontal movement of the pallet from the dispensing position thereof laterally of said track assemblies, two pallet positioning members respectively carried by said turntable adjacent to the opposite ends of said track assemblies and engageable with the pallet for preventing the horizontal movement thereof from the dispensing position thereof longitudinally of said track assemblies, and drive means for effecting rotation of said turntable in a coil-unreeling direction, whereby strapping material may be dispensed directly from the pallet by rotation of said turntable without handling of the coil or removal thereof from the pallet.

4,058,271

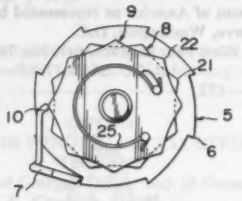
EMERGENCY LOCKING RETRACTOR FOR SEAT BELT ASSEMBLIES

Susumu Ubukata; Yasukazu Mizutani; Syozo Iyoda, and Hiroshi Aoi, Ichinomiya, all of Japan, assignors to Susumu Ubukata, Nagoya, Japan

Filed Feb. 24, 1977, Ser. No. 771,827
Claims priority, application Japan, Mar. 2, 1976, 51-22878; July 20, 1976, 51-86869; Aug. 18, 1976, 51-98350
Int. Cl.[2] A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 B **18 Claims**

1. An emergency locking retractor for a seat belt assembly comprising, in combination, a frame, a reel rotatably supported by said frame and having a belt thereon, first resilient means urging to said reel to rotate in a direction of belt retraction, toothed wheel means rotatable with said reel, said toothed wheel means having teeth or protuberances on and along its periphery at a predetermined pitch, a locking pawl pivotally mounted on said frame for movement into and out of engagement with said teeth or protuberances of said toothed wheel means, said locking pawl being effective to lock said reel against rotation in a direction of belt extension upon engage-

ment with said toothed wheel means, inertia wheel means having protuberanes on and along its periphery at the same pitch as said predetermined pitch and disposed in coaxial relationship to said toothed wheel means so as to be rotatable through a predetermined angle relative to the same, second resilient means for normally holding said inertia wheel means in a predetermined angular position relative to said toothed wheel means, where said protuberances of said toothed wheel means and of said inertia wheel means are at the same phase, and for permitting said inertia wheel means to rotate in synchronism with said toothed wheel means during normal rotation of said reel in the direction of belt extension at relatively low acceleration, said second resilient means yielding upon a high acceleration in exccess of a predetermined value being imparted to said reel in the direction of belt extension to permit angular displacement of said inertia wheel means through said predetermined angle relative to said toothed wheel means so as



to cause a difference in phase of said protuberances between the toothed wheel means and the inertia wheel means, as well as a change in combined peripheral contour formed by the protuberances of the toothed wheel means and the inertia wheel means, a pivotally supported follower lever following the combined peripheral contour formed by said protuberances, third resilient means urging said follower lever toward the peripheral contour whereby said follower lever is normally held in sliding contact with at least said toothed wheel means and oscillates in conformity with the combined peripheral contour, and means associating said follower lever with said locking pawl in a manner such that the locking pawl permits unobstructed passage therepast of said teeth or protuberances on said toothed wheel means during said normal rotation of the reel and, upon occurence of said change in combined peripheral contour, is held pivoted toward said toothed wheel means for engagement therewith.

4,058,272

INERTIA LOCKED SAFETY BELT TAKE-UP REEL

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 392,703, Aug. 29, 1973, abandoned. This application July 16, 1975, Ser. No. 596,489
Claims priority, application Japan, Sept. 1, 1972, 47-087123
The portion of the term of this patent subsequent to July 29, 1992, has been disclaimed.
Int. Cl.² A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 B **8 Claims**

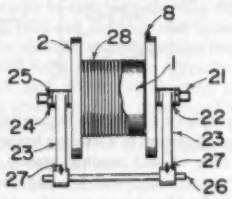
1. An automatic locking safety belt reel mechanism comprising a belt take-up reel, a first ratchet wheel rotatable with said take-up reel, a first pawl disposed proximate said first ratchet wheel and actuatable into engagement therewith to lock said reel against belt withdrawal, spring means biasing said first pawl out of engagement with said first ratchet wheel, a first clutch member rotatable with said reel, a second rotatable clutch member coaxial with said first clutch member and in slipping coupling therewith, a second ratchet wheel coaxial with said clutch members, said first ratchet wheel being normally rotatable relative to said second ratchet wheel, a second pawl disposed proximate said second ratchet wheel, means for actuating said second pawl in response to relative rotation between said first and second clutch members to engage and rock said second ratchet wheel, and actuating means responsive to the rocking of said second ratchet wheel to actuate said first pawl into engagement with said first ratchet wheel.

4,058,273

INFLATABLE CORE WIRE REEL

Donald D. Buell, Ilikai Hotel, 1777 Ala Moana Blvd., Apt. No. 1613, Honolulu, Hawaii 96815

Filed Feb. 5, 1976, Ser. No. 655,455
Int. Cl.² B65H *75/22, 75/24*
U.S. Cl. 242—115 **9 Claims**



1. A knockdown reel for coils of wire comprising:
a. an inflatable core, said core, by selective inflation thereof, having an adjustable diameter to interfit the bore of wire coils and an adjustable length to match the axial length of wire coils;
b. a pair of end flanges;
c. a means to couple the end flanges to the ends of the inflatable core co-axially to form a flanged reel; and
d. a supporting means operatively attached to said flanged reel for support and rotation of the reel thereon and said supporting means being operatively adjustable to accommodate variations in the length of the core and the corresponding distance between the flanges to position the flanges against the sides of the coil;
whereby wire from the fully supported coils may be successively removed from the coils without binding.

4,058,274

PNEUMATIC TUBE SYSTEM

Ernest Hochradel, 61 Edison Terrace, Sparta, N.J. 07871; Werner Hauer, 381 Passaic Ave., Nutley, N.J. 07110; Martin R. Meyer, 75 Voorhis Place, Ringwood, N.J. 07456, and Frederick A. Reuter, 398 Marycrest Drive, Cincinnati, Ohio 45237

Filed Sept. 23, 1976, Ser. No. 725,850
Int. Cl.² B65G *51/32*
U.S. Cl. 243—5 **6 Claims**

1. A pneumatic tube system for conveying carriers, comprising:
two carrier-conveying pneumatic tube branches, each branch including:
a. at least two stations and a branch tube,
b. a carrier reversing tube closed at one end,
c. a diverter having separate ports individually connected to said branch tube, different ones of said stations, and to said carrier reversing tube for selectively completing carrier-conveying paths between (1) said stations and branch tube and (2) said carrier reversing tube,

d. only one air supply connected to said carrier reversing tube to alternatively and selectively transfer carriers into and out of said carrier reversing tube via said diverter,

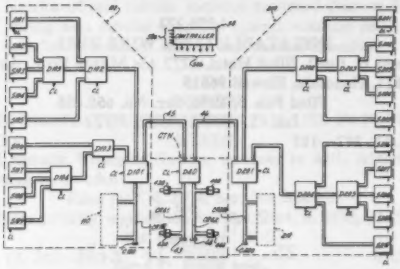
an inter-branch carrier transfer network including:

a. at least one carrier reversing tube closed at one end,

b. a diverter connected between said carrier reversing tube and said branch tubes for selectively connected said branch tubes to said carrier reversing tube, and

said inter-branch carrier transfer network having no air supply associated with it except for said branch air supplies,

a controller for operating said branch and network diverters



and said branch air supplies to sequentially draw a carrier from a sending station in a sending branch into the carrier reversing tube of said sending branch via said sending branch diverter using said sending branch air supply, thence propel said carrier into said carrier reversing tube of said inter-branch carrier transfer network via said diverter and branch tube of said sending branch and said diverter of said inter-branch carrier transfer network using said sending branch air supply, and thereafter draw said carrier from said network carrier reversing tube to a destination station in said destination branch via said diverter of said inter-branch carrier transfer network, said branch tube and diverter of said destination branch using said destination branch air supply.

4,058,275

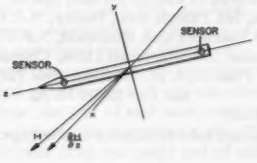
LOW FREQUENCY PASSIVE GUIDANCE METHOD

Clarence K. Banks, San Diego, Calif.; Prescott D. Crout, Lexington, Mass., and Paul B. Homer, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 28, 1970, Ser. No. 102,248

Int. Cl.[2] F41G *9/00, 11/00;* **G01R** *38/02, 33/00*

U.S. Cl. 244—3.15 **4 Claims**



1. A method of detecting and determining the direction to a low frequency electromagnetic field with respect to the line-of-sight of a body having a body axis comprising

positioning at least two sensors for sensing low frequency electromagnetic fields at spaced points in a body;

deriving magnetic field intensity H from at least one of said at least two sensors;

deriving the gradient of the magnetic field intensity $\delta H/\delta r$ from said at least two sensors;

the gradient of the magnetic field intensity being obtained by taking the difference of the measurements of the magnetic field intensity from said at least two sensors separated by the distance between said at least two sensors;

determining the angular difference between the body axis and the line-of-sight to the source which is radiating the electromagnetic low frequency field radiating source based on H and δH.

4,058,276

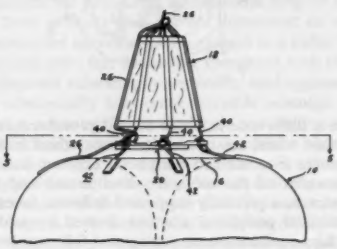
PILOT CHUTE CROWN LINE ATTACHMENT SYSTEM

Herbert R. Brown, Monroe County, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 16, 1977, Ser. No. 769,374

Int. Cl.[2] B64D *17/68*

U.S. Cl. 244—152 **3 Claims**



1. A system for attaching a pilot chute to the crown area of a main parachute having a vent pull-down line, comprising: a pilot chute bridle connected between said pilot chute and one position of the crown area of the main parachute canopy; means connecting said pilot chute bridle to a plurality of additional substantially equally spaced positions of the crown area of said main parachute canopy; said means for securing the pilot chute bridle to the additional positions of the crown area including means, responsive to inflation of the main parachute canopy, for releasing the pilot chute bridle from the additional positions of the crown area of the main parachute canopy.

4,058,277

CAPTIVE REMOTE-CONTROLLED HELICOPTER

Hugo Kozakiewicz, Uhldingen-Muhlhofen, and Wolfgang Reuter, Friedrichshafen, both of Germany, assignors to Dornier GmbH., Germany

Continuation-in-part of Ser. No. 594,004, July 8, 1975, abandoned. This application July 28, 1976, Ser. No. 709,268

Claims priority, application Germany, Sept. 19, 1974, 2444775

Int. Cl.[2] B64C *27/04*

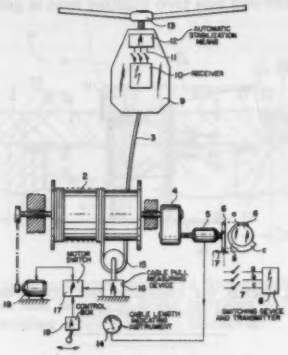
U.S. Cl. 244—17.17 **5 Claims**

1. In a helicopter adapted to fly while moored to a ground station and being remote-controlled therefrom, with means in the helicopter for automatic stabilization of the flight attitude, and in which the mooring cable is wound-on and wound-off of a cable drum by a drive means,

the improvement comprising means whereby said automatic stabilization means in the helicopter is adapted to be switched to different operating modes,

and switching means in the ground station coupled to said

cable drum, said switching means actuating a transmitting means to transmit control signals to a receiving mecha-



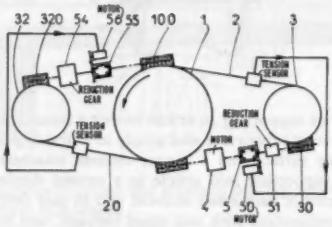
nism for said automatic stabilization means in dependence upon the wound-off length of said mooring cable.

4,058,278

APPARATUS FOR WINDING PLURAL STRIPS UNDER TENSION

Gaston Denoor, and Georges Thillet, both of Grenoble, France, assignors to B.V.S., Grenoble, France

Filed Mar. 16, 1976, Ser. No. 667,436
Claims priority, application France, Nov. 5, 1975, 75.33750
Int. Cl.[2] B21F *17/00*; B65H *77/00*
U.S. Cl. 242—7.22 **3 Claims**



1. Apparatus for winding at least two strips of an elongated product under tension onto a cylindrical body each from a spool holding a supply of product, said apparatus comprising,

a frame displaceable longitudinally along the cylindrical body,

a ring fixed to said frame and coaxially surrounding the cylindrical body,

a first support turret supporting said spools, each spool being rotatably mounted on said turret around a respective fixed axis on said turret,

second and third control turrets for controlling the unwinding of each respective spool, said second and third turrets each including a gear toothing,

a pinion drivingly coupled with each spool and in mesh with the gear toothing of a respective one of the control turrets,

roller bearing means rollably supporting the turrets on said ring for relative rolling movement around the cylindrical body,

a main drive motor means for driving each individual turret around the cylindrical body,

a differential drivingly coupling said main drive motor means and each said control turret, said differential including pinion gears, and

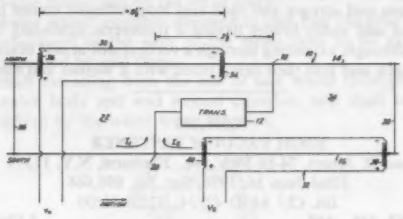
auxiliary motor means for independently driving the pinion gears of said differential to control the tension of the strip.

4,058,279

FLAT WHEEL DETECTOR

Klaus H. Frielinghaus, Rochester, NY, assignor to General Signal Corporation, Rochester, N.Y.

Filed Nov. 29, 1976, Ser. No. 745,702
Int. Cl.[2] B61K *9/12*
U.S. Cl. 246—169 R **5 Claims**



1. A system for detecting flat wheels on railroad cars, comprising

a transmitter having a high frequency output;

a pair of closed loops defining a pair of individual test sections for a measuring or testing area; said loops including portions of a pair of rails, and shorting means connected between said rails and defining end boundaries for said respective test sections, such that a high frequency current of substantially fixed magnitude normally flows in each loop through said respective shorting means when a wheel axle is absent from the corresponding test section;

means for connecting said transmitter to said rails, said means including a staggered arrangement so as to produce overlap of said two test sections;

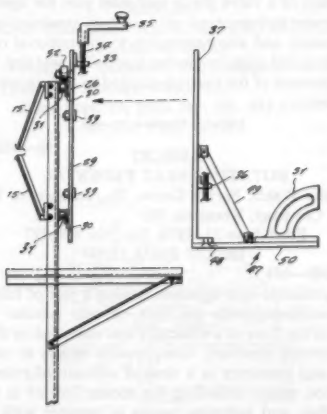
a detection device in each loop for sensing the individual current flow in each loop and for providing, responsive to the presence of an axle in the respective test sections, a relatively high voltage output which differs substantially from an essentially zero voltage output in the absence of an axle therein.

4,058,280

TABLE RAIL

Timothy Clancy, 981 McAllister Ave., Columbus, Ohio 43205

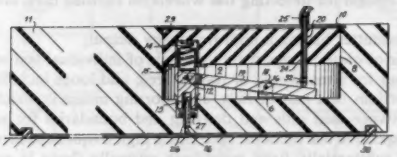
Filed July 21, 1976, Ser. No. 707,330
Int. Cl.[2] A47B *21/00*
U.S. Cl. 248—2 **6 Claims**



1. A table rail, comprising in combination, a stable frame mountable in vertical position upon a work table, said stable frame including upper and lower horizontal angles and vertical side angles welded together at their corners, and being

strengthened by a pair of stable braces on a rear side thereof, each opposite end of each said stable brace being secured to a corner of said stable frame, and longitudinally center portions of said stable braces being forcibly urged toward each other by means of a stable brace adjusting assembly, said stable brace adjusting assembly comprises a channel shaped bracket fitted with an upper and lower screw in axial alignment, said longitudinally central portions of said stable braces being clamped between said screws, and each said longitudinally center portion of said stable braces having a transverse extending bolt therethrough, extending through a vertical slot in said bracket, and each said bolt then being fitted with a washer and nut.

4,058,281
HIGH VACUUM FASTENER
Karmen D. Albert, 74-16 58th Ave., Elmhurst, N.Y. 11373
Filed June 16, 1976, Ser. No. 696,666
Int. Cl.[2] A45D *42/14*; B25B *11/00*
U.S. Cl. 248—362 **7 Claims**



1. A vacuum device for securement against a flat surface and capable of maintaining a vacuum against the surface by means of an external vacuum source comprising:

a block having a smooth first surface for contact against the flat surface, said smooth surface having a closed peripheral groove;

sealing means disposed in said closed peripheral groove defining a vacuum retaining area with the flat surface; and

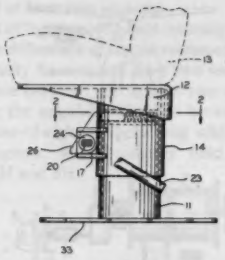
valve means disposed in said block and having an inlet accessible on a second block surface and communicative to said vacuum retaining area, said valve means including a valve plug disposed within said block, an inlet port disposed in said valve plug for receiving an elongated valve pin, nozzle means secured within said block and communicative to the vacuum-retaining area formed between said first block surface and the flat surface, a valve seat seal surrounding said nozzle means and communicative with said vacuum-retaining area, and means responsive to the insertion of a valve pin in said inlet port for opening said valve seat seal to permit said vacuum-retaining area to be evacuated, and also responsive to the removal of a valve pin from said inlet for closing said valve seat seal to permit maintenance of the vacuum created in said vacuum-retaining area.

4,058,282
ROTATING SEAT PEDESTAL
Robert John Wahls, Spring Grove, Ill., assignor to Freedman Seating Company, Evanston, Ill.
Filed June 21, 1976, Ser. No. 698,417
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—418 **4 Claims**

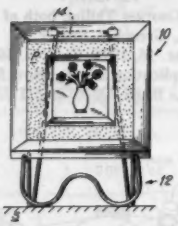
1. In a rotatable seat structure having a pair of tubular telescoping members, with the first of said tubular members mounted to the floor of a vehicle, a seat mounted on the second of said tubular members, compression means to selectively maintain said members in a desired attitude of rotation, said compression means including slot means formed in said exterior member, and indexing means in register with said slot means to positively align said tubular members in at least one preselected attitude of rotation, the improvement comprising:

single control lever means,

said control means mounted on said exterior member said control means being rotatable and comprising means for defeating said indexing means when rotated in first direction and means for engaging said compression means when rotated in a second direction.



4,058,283
CONVERTIBLE PICTURE FRAME STAND
Jean Frechtman, 400 E. 56th St., New York, N.Y. 10022
Filed May 18, 1976, Ser. No. 687,535
Int. Cl.[2] A47F *7/14*
U.S. Cl. 248—441 D **4 Claims**

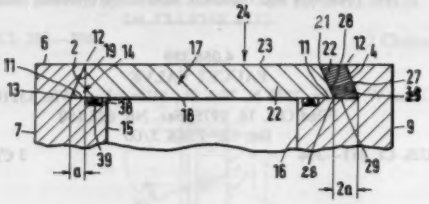


2. A device supporting an article having a frame comprising a stand element supporting said article in a first display mode on a display surface and a hanger element attached to said frame for supporting said article in a second display mode independently of said stand element and in said first display mode in conjunction with said stand element, said stand element including an upper resilient portion for attachment to said hanger element and a lower display portion in contact with said display surface, said hanger element including coupling means for receiving said upper resilient portion of said stand element in said first display mode and access means for defining a connection channel to said coupling means for said upper resilient portion, said access means including an edge surface of said hanger element to provide a limiting stop for said stand element in pivoting away from said article to establish said first display mode at a predetermined display angle.

4,058,284
INSERT RECEIVING AND SECURING DEVICE
Johann Rath, Im Wasen 13, 7141 Benningen, Germany
Filed Feb. 9, 1976, Ser. No. 656,274
Claims priority, application Germany, Feb. 8, 1975, 2505381
Int. Cl.[2] B29D *27/00*
U.S. Cl. 249—163 **14 Claims**

1. In combination, an insert having a top side therewith free of screws and problems of leakage associated with loosening thereof due to thermic changes, and a foam mold used during foaming of synthetic materials having first rims with first fitting surfaces, said mold being provided with a structure having at least three second fitting surfaces complementary with the insert, and a plurality of holding strips having second rims with

third complementary fitting surfaces, said second fitting surfaces extending at least partially over said first fitting surfaces



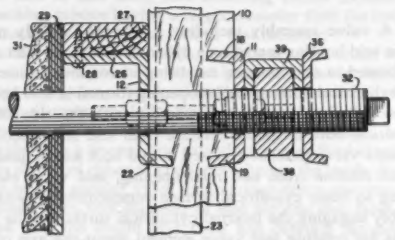
of said first rims, and over said third fitting surfaces of said holding strips, said insert also being provided with third rims having said holding strips extending thereover.

4,058,285

APPARATUS TO ADJUST AND MAINTAIN THE DISTANCE BETWEEN WALL FORMS

Stanley Walski, Media, Pa., assignor to Con-Spec Devices Inc., Wilmington, Del.

Filed May 25, 1976, Ser. No. 689,726
Int. Cl.[2] E04G *17/08*
U.S. Cl. 249—216 **18 Claims**



1. Apparatus to adjust and maintain spacing between building members comprising
a screw type wall tie adapted to extend between the building members,
a back side plate having means to attach said back side to one of the building members,
a front side plate attached to said back side plate and spaced from said back side plate,
a nut mounted for rotation on one end of said screw type wall tie,
means to enclose said nut attached to said front side plate and enclosing said nut,
said wall tie passing substantially through laterally centered openings in said side plates, and said nut enclosing means,
and means to receive and attach to said screw type wall tie mounted on the opposite end of said wall tie and adapted to be attached to the other of the building members.

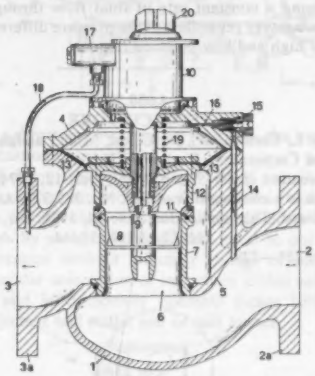
4,058,286

VALVE WITH DELAYED ACTION CLOSING MEANS

Benjamin Berger, Kibbutz Evron, Doar Na Oshrat, Israel

Continuation of Ser. No. 299,675, Oct. 24, 1972, abandoned.
This application Sept. 18, 1973, Ser. No. 398,313
Int. Cl.[2] F16K *31/385*
U.S. Cl. 251—15 **5 Claims**

1. A delayed action closing valve comrising:
a valve casing having an inlet and outlet;
a valve seat intermediate said inlet and outlet;
a valve body engageable with said seat;
a membrance connected to said valve body to partition the interior of said valve casing into a first and a second chamber at respective sides of said membrane;
said membrane being firmly supported in its marginal, peripheral region at both its extreme positions by a portion of said valve casing whereby upon closing of the valve, said membrane is substantially wholly supported by the valve casing and by the valve body;
a water wheel rotatably disposed in said first chamber and positioned in the path of the rising flow to be axially impinged by said flow;
a shaft extending from the hub of said wheel through the valve body and said second chamber, said shaft being driven by the water wheel rotation;



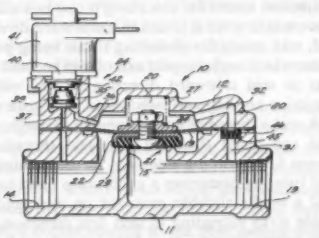
by-pass means providing fluid communication from said inlet to said second chamber and from said second chamber to said outlet;
an auxiliary valve disposed along said by-pass means intermediate said second chamber and said outlet;
flow-metering means connected to said shaft above said second chamber;
said auxiliary valve actuated by said flow-metering means into a closed position after passage of a predetermined quantity of water through said delayed action closing valve to cause said valve body to engage said seat.

4,058,287

PILOT-OPERATED VALVE HAVING CONSTANT CLOSING RATE

James P. Fromfield, Belleville, N.J., assignor to Automatic Switch Company, Florham Park, N.J.

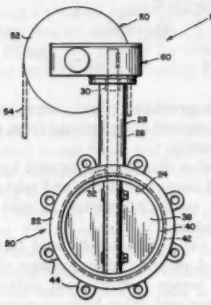
Filed Sept. 19, 1975, Ser. No. 615,139
Int. Cl.[2] F16K *31/385*
U.S. Cl. 251—46 **7 Claims**



1. A valve comprising:
a. a valve body having an inlet port for connection to a high pressure region, an outlet port for connection to a low pressure region, and an orifice between said ports surrounded by a valve seat,

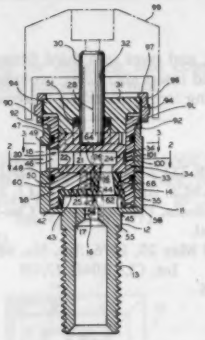
b. a main valve member movable into and out of engagement with said valve seat to close and open said valve, respectively,
c. a chamber within said valve body on the side of said main valve member opposite the side which faces said valve seat,
d. a pilot valve operable independently of the pressure in said chamber for controlling communication between said chamber and a region where the pressure is low as compared to the high pressure at said inlet port,
e. a bleed passageway in said valve body through which said inlet port communicates with said chamber, and
f. a flow control element, in the form of an annular washer of resilient material, within said bleed passageway for mantaining a constant rate of fluid flow through said bleed passageway regardless of the pressure differential between the high and low pressure regions.

4,058,288
SCOTCH YOKE
William L. Carlson, Jr., St. Cloud, Minn., assignor to General Signal Corporation, Rochester, N.Y.
Continuation of Ser. No. 532,077, Dec. 12, 1974, abandoned, which is a continuation of Ser. No. 385,379, Aug. 3, 1973, abandoned. This application June 14, 1976, Ser. No. 695,873
Int. Cl.[2] F16K *31/44*
U.S. Cl. 251—229 **4 Claims**



1. A valve comprising:
a. a scotch yoke having a hole therethrough, a threaded rod extending along an axis through said hole in a first direction, means for preventing said rod from moving in said first direction, a yoke arm in said housing pivotable about an axis and extending in a second direction that intersects said first direction, slot means in said yoke arm, a member on said rod and threadingly engaged therewith, said member having projection means extending through said slot means in said yoke arm, a means cooperating with said projection means for absorbing thrust in a sideward direction on said yoke arm and in a sideward direction on said rod, said means for absorbing thrust being positioned in a plane which includes said axis of said rod and is perpendicular to said sideward direction of said rod to thereby minimize bowing and twisting in said yoke arm and said rod, and a threaded hole extending through said member, said rod being threaded into said threaded hole, said means for absorbing sideward thrust to minimize bowing and twisting comprises a guide strap fixed to said housing and a saddle slidably mounted on said guide strap, said guide strap extending in said first direction, said projection means fitting into a hole in said saddle to link said saddle to said yoke arm, whereby rotation of said rod slides said member in said first direction and pivots said yoke arm about said axis;
b. a valve body having a passage for fluid flow, a closure means for controlling flow therethrough and a shaft extending along said shaft axis and connected to said closure means; and
c. actuator means for rotating said threaded rod to rotate said yoke arm and therefore said closure means.

4,058,289
FAUCET VALVE
Glenn W. Hicks, 2749 N. 75th St., Milwaukee, Wis. 53210
Filed Oct. 14, 1975, Ser. No. 622,150
Int. Cl.[2] F16K *5/00*
U.S. Cl. 251—304 **3 Claims**



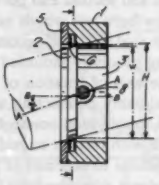
1. A valve assembly including a housing, a body means within said housing including a cylindrical bore, an inlet opening formed in said housing and being in communication with said cylindrical bore, an outlet opening formed in said housing and said body means communicating with the side of said cylindrical bore in spaced relation from said inlet opening, a rotatable valve element disposed in said bore and in generally spaced relation from said inlet opening, said valve element having an outer cylindrical surface complementary with and slidably engaging the internal cylindrical surface of the bore, means for rotating said valve element about the axis of said bore, said valve element having an end face lying in a plane generally normal to said rotational axis and facing said inlet opening, a portion of said body means being disposed between said inlet opening and said end face of said valve element, said portion of said body means having a first surface portion lying in a plane normal to said rotational axis and being slidably engaged by said end face, said portion of said body means also having a second generally cup-shaped surface spaced from said first surface in the direction of said inlet opening, a first opening formed in the end face of said valve element, a passage formed in said portion of said body means and extending between said first and second surfaces thereof, a sealing element disposed adjacent said portion of said body means including a hollow tubular portion disposed within said passage and an end engaging said end face of said valve element and a cup-shaped portion of substantially greater diameter than said tubular portion, and conforming generally to the second surface of said portion of the body means, said tubular and said cup-shaped portion of said sealing element being assymetric with respect to each other, the tubular portion of said sealing member of said passage and the opening in said valve being nonconcentric relative to said rotational axis, rotation of said valve element causing movement of said element from a first position wherein said first opening and said tubular portion are in registry to provide a flow path between said inlet and outlet openings to a second position wherein said opening and tubular portion are out of registry, the existence of pressurized water at said inlet opening acting to hold said flexible sealing element against the walls of said passage and said tubular portion against said valve element to affect a seal therebetween.

4,058,290

GATE VALVE

Juha Antti Elia Nelimarkka, Helsinki, Finland, assignor to Neles Oy, Helsinki, Finland

Filed Mar. 29, 1976, Ser. No. 671,492
Claims priority, application Finland, Apr. 15, 1975, 751116
Int. Cl.[2] F16K 1/22
U.S. Cl. 251—306 2 Claims



1. A valve comprising:

a body member, a substantially circular bore therethrough, said bore having an axis and fluid being adapted to flow through said bore;

a metal annular valve seat member;

means for mounting said annular valve seat member in said bore so that said valve seat member has a mating surface thereof disposed in said substantially circular bore so that said annular valve seat member is radially movable with respect to said circular bore both toward and away from an axis of said bore, said mounting means including a packing groove having a larger diameter than the outside diameter of said annular valve seat member;

a disc for engaging said mating surface of said annular valve seat member to close off said bore, said disc including a pair of circular offset faces, each of said faces being of the same diameter; said disc being configured such that a first line connecting the centers of said faces forms an acute angle with a second line extending perpendicularly from the center of either of said faces wherein the inside diameter of said annular valve seat member when unstressed is greater than said diameter of said circular disc faces but less than the length of a third line defining the largest dimension of said disc; and

shaft means for mounting said disc for rotation about an axis of rotation between a closed position and an open position, said axis of rotation being perpendicular to said bore axis and being perpendicular to a plane which includes said bore axis and said third line, said axis of rotation being offset along said bore axis from said disc when said disc is in said closed position; said shaft means being operable to move said disc into contact with said annular valve seat member mating surface to move portions of said annular valve seat member away from said bore axis and to move other portions of said annular valve seat member toward said bore axis so that tight engagement is provided between said annular valve seat member and said disc around the whole periphery of said disc such that the flow of fluid through said bore is closed off.

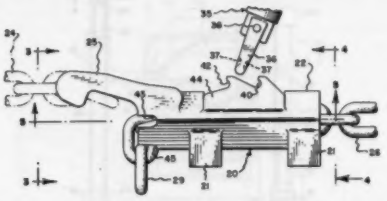
4,058,291

LOAD BINDER

Kenneth D. Schreyer, Clarence; Soma M. Rohosy, Hartland, and Charles J. Manney, Kenmore, all of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed Nov. 10, 1976, Ser. No. 740,423
Int. Cl. B66f 1/06
U.S. Cl. 254—74 8 Claims

1. In a manually operated tool for use in tensioning and locking a welded wire type link chain at least part way about a load, said tool including a tool body portion of elongated form and defining a chain travel accommodating tunnel extending longitudinally thereof; a tool operator actuated lever pivotally supported on said tool body portion and extending into said tunnel for engagement with said chain for advancing said chain between inlet and outlet ends of said tunnel incident to operator actuated chain driving pivotal movements of said lever; guide means mounted on said tool body portion for maintaining said chain within said tunnel in a prescribed angular orientation; and a chain holding means mounted on said tool body portion and arranged to releasably engage said chain for releasably restraining chain retrograde movement through



said tunnel in a direction towards said inlet end, the improvement in combination comprising:

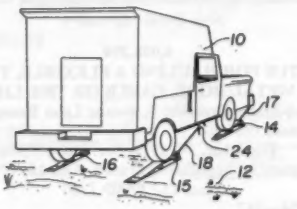
said chain holding means including at least two independently operated means successively engageable with alternate links of said chain for restraining chain retrograde movements by an amount essentially equal to one chain pitch increment without effecting change of said prescribed angular orientation of said chain within said tunnel, and said independently operable means being arranged adjacent said outlet end of said tunnel.

4,058,292

VEHICLE LEVELING SYSTEM

Harold E. Goodrich, 2817 Bridgeport Ave., and Dolores M. Fabel, 185 Franciscan Drive, both of San Ramon, Calif. 94583

Filed June 2, 1977, Ser. No. 802,605
Int. Cl.[2] E02C 3/00
U.S. Cl. 254—88 11 Claims



1. A system for leveling a vehicle parked on uneven terrain comprising:

means for determining the wheel of the vehicle on the lowest position on the terrain, said determining means including means for indicating the relative amount that said low wheel should be raised to level the vehicle;

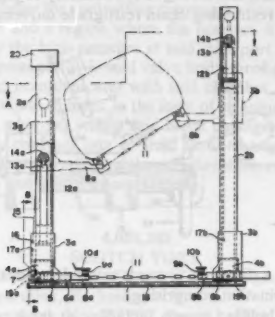
an inclined ramp adapted to be disposed proximate the low wheel of the vehicle; and

means for nonrigidly linking the ramp to the vehicle at a position on the vehicle disposed relatively behind the base of said ramp when the ramp is located proximate the low wheel of the vehicle so that the vehicle can be motivated to cause the low wheel to travel up the ramp until the linking means becomes taut, said linking means including coded indicia corresponding to the determining means to indicate the appropriate length of said linking means required to allow the vehicle to travel up the ramp until the vehicle is substantially level, the linking means then becoming taut to stop the vehicle in the level position.

4,058,293
TWO-MASTED LIFTING APPARATUS

Tamotsu Kameda, 2594-5 Ohmiya, Fujinomiya, Shizuoka, Japan

Filed Oct. 12, 1976, Ser. No. 731,364
Claims priority, application Japan, Apr. 27, 1976, 51-47177
Int. Cl.² B66F 7/26
U.S. Cl. 254—89 H 12 Claims

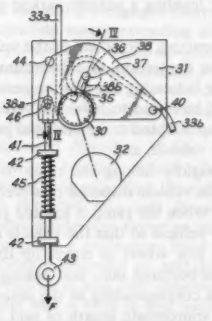


1. A two-masted lifting apparatus comprising:
a base means;
a pair of spaced upright masts disposed on said base means in opposing relation;
a carriage slidably mounted on each of said masts,
a first driving means including means operatively connecting both of said carriages for synchronous movement of said carriages simultaneously along said masts,
a supporting means on each of said carriages for supporting an object to be lifted, each of said supporting means including horizontally movable means each having a portion to accommodate a range of movement of adjustment toward or away from the respective associated mast of each of said supporting means, and
means connecting said supporting means to maintain equidistant movement of adjustment of said portions of said horizontally movable means between said carriages.

4,058,294
APPARATUS FOR HAULING A FLEXIBLE, TEXTILE OR METAL ROPE, CABLE OR THE LIKE

Bruno Jean-Marie Dressler, 3, avenue Leon Bourgain, Courbevoie, France (92400)

Filed Apr. 16, 1976, Ser. No. 677,756
Claims priority, application France, Apr. 18, 1975, 75.12091
Int. Cl.² B66D 1/00
U.S. Cl. 254—167 6 Claims

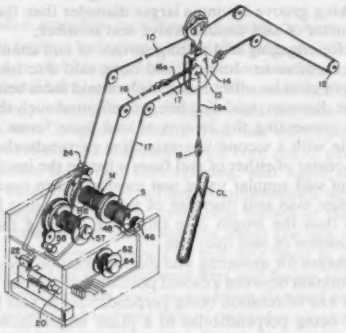


1. Hoisting apparatus for applying a pulling force on a flexible cable comprising a load connection; a first pulley for driving said cable by friction over a part of its circumference between an entrance point of the cable from which the part of the cable subjected to a tension under the effect of a load to be hauled freely extends, and an exit point of the cable from which the part of cable not subjected to tension extends; means for rotating said drive pulley; a frame supporting said drive pulley and rotating means; a pressure roller freely rotatable about an axis parallel to the axis of rotation of said drive pulley for selectively pressing said cable against said drive pulley, a lever arm having first and second end portions and formed by two spaced side plates between which said pressure roller is mounted intermediate said first and second end portions, said first end portion being pivotally mounted to said frame about an axis parallel to the axis of rotation of said drive pulley; a connecting member slidably connecting said second end portion of said lever arm to said load connection, said connecting member being slidable with respect to said frame in a direction substantially perpendicular to said axis of rotation of the drive pulley and said side plates whereby load force applied to said load connection is transmitted to said pressure roller through said connecting member and side plates.

4,058,295
SMALL, VARIABLE-SPEED YARDER

John B. Morfitt, Langley, Canada, assignor to Lantec Industries, Ltd., Langley, Canada

Filed Oct. 10, 1975, Ser. No. 621,512
Int. Cl.² B66D 1/26
U.S. Cl. 254—184 5 Claims



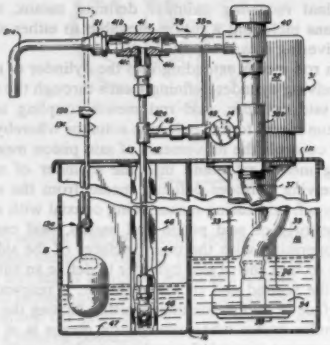
1. A yarder system for operating over the ground having main, haulback and slack-pulling drums with corresponding lines wrapped thereon, a carriage supported for movement by lines suspended above the ground, said main, haulback and slack-pulling lines being coupled to said carriage for moving the carriage outwardly by simultaneously pulling in the haulback line and paying out the main and slack-pulling lines and inwardly by simultaneously pulling in the main and slack-pulling lines and paying out the haulback line, a power supply, a reversible primary motive means, independent main, haulback and slack-pulling planetary drive transmissions, each planetary drive transmission having an output drive and first and second input drives, means coupling the first input drive of each of said planetary drive transmissions to said primary motive means, and hydraulic means coupled to the second input drive of said planetary drive transmission of said haulback drum for providing a variable interlock between the haulback drum and the main and slack-pulling drums and differential drive means coupled to said second input drives of said main and slack pulling planetary drive transmissions for providing a variation in both the relative rotational speeds and direction and the relative rotational speed or direction of the output drives of the main and slack-pulling drums.

4,058,296

MIXING APPARATUS

Edward M. Wetherby, Westchester, Ill., assignor to Graymills Inc., Chicago, Ill.

Filed Apr. 5, 1976, Ser. No. 673,582
Int. Cl.[2] B01F *15/00*
U.S. Cl. 366—160 9 Claims



1. An apparatus for mixing a first fluid under pressure from a first source with a second fluid from a second source, comprising a primary conduit having an inlet communicating with the first fluid in the first source, and an outlet; a secondary conduit having an inlet communicating with the second fluid in the second source, and an outlet; a diversion conduit having an inlet connected to said primary conduit upstream of the primary conduit outlet and an outlet connected to said secondary conduit upstream of the outlet thereof; valve means for regulating the flow of the first fluid from said primary conduit through said diversion conduit, said valve means being adjustable between open and closed positions; and eductor means having an outlet and a primary inlet, the latter being connected to said primary conduit outlet and disposed downstream of the connection between said primary and diversion conduits, said eductor means being provided with a suction inlet intermediate the primary inlet and outlet of said eductor means, said suction inlet being connected to the secondary conduit outlet and downstream of the connection between said secondary and diversion conduits, said valve means, when in said closed position, effecting flow cut-off of said first fluid through said diversion conduit and maximum flow of said second fluid through said secondary conduit to said eductor, and when in said open position, effecting maximum flow of said first fluid through said diversion conduit and minimum flow of said second fluid through said secondary conduit to said eductor, whereby a continuous fluid flow through at least said secondary conduit downstream of the connection with said diversion conduit occurs when the first fluid in said primary conduit flows through the primary inlet and outlet of said eductor means.

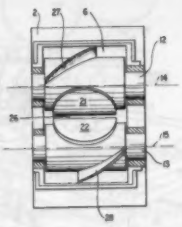
4,058,297

INTERNAL MIXER

Wilhelm Seufert, Korntal, Germany, assignor to Werner & Pfleiderer, Theodorstr, Germany

Filed Dec. 11, 1975, Ser. No. 639,888
Claims priority, application Germany, Dec. 11, 1974, 2458568
Int. Cl.[2] B29B *1/10*
U.S. Cl. 366—81 5 Claims

1. An internal mixer for kneading and rolling comprising:
a mixing chamber;
two mixing shafts, each having an axis and an outer periphery, within said mixing chamber, said axes of said shafts being in spaced parallel relationship;
kneading blades provided on said outer peripheries of said shafts; and
arcuate roller surfaces connected to said outer peripheries of said shafts; and wherein
said shafts are positioned in parallel with respect to one another such that when said shafts are rotated in superposed relation a gap always exists therebetween;



said arcuate surfaces and said kneading blades are arranged on each of said mixing shafts in succession in the circumferential direction; and
said mixing shafts are drivable in opposite directions to impart identical peripheral speeds to said arcuate surfaces.

4,058,298

SCREW EXTRUDER WITH AN ENLARGED FEED SECTION

Joseph J. Duska, Manasquan, and Paul E. McGill, Neshanic, both of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Jan. 5, 1977, Ser. No. 757,045
Int. Cl.[2] B29B *1/06*
U.S. Cl. 366—76 10 Claims

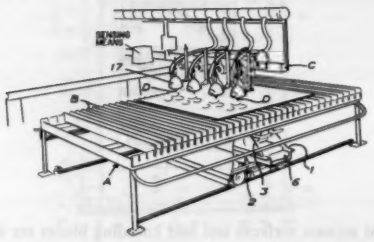
1. An extruder comprising:
a barrel having an upstream feed section of larger screw bore, and a downstream section of smaller screw bore in coaxial alignment with the larger bore, and a relatively short tapered transition section providing a transition bore joining said larger and smaller bore sections;
a screw assembly comprising a first large-diameter screw occupying said upstream section with the thread thereof to sweep said larger bore and said transition bore; and a second smaller diameter screw occupying said downstream section with the thread thereof to sweep said smaller bore, both of said screws having a threaded portion comprising a core and a thread supported thereon, and an axial extension adapting each screw for connection with a drive means;
said second screw having a shaft portion extending coaxially upstream internally of said first screw in bearing relation therewith to connect and maintain said screws in coaxial relationship; and
drive means connecting with said extensions for rotating both screws.

4,058,299

APPARATUS FOR REMOVING POLLUTING MATTER ARISING IN FLAME CUTTING AND LIKE OPERATIONS

Erik Allan Lindkvist, 38 Korpralsvagen, Umea, Sweden (S-902 53)

Filed Aug. 5, 1976, Ser. No. 711,878
Claims priority, application Sweden, Aug. 7, 1975, 7508895
Int. Cl.² B23K *7/02*
U.S. Cl. 266—48 **9 Claims**



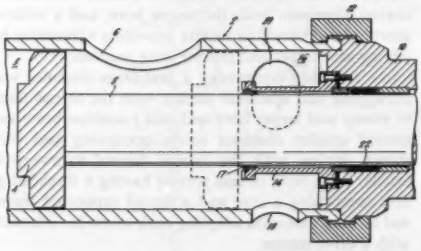
1. An apparatus for removing polluting matter arising in flame cutting and like operations, such as fumes, dust or minute particles, said apparatus being intended for use in combination with a perforated cutting table and a cutting assembly movably arranged above the cutting table and including one or more cutter units, wherein a suction hood is associated with each of the cutter units of the cutting assembly and connected to a suction device, an upwardly facing suction box disposed beneath the cutting table extends transversely of the width of said table and is movable along it, said suction box being connected to the suction device and displaceable together with the cutting assembly with the aid of a device operable by sensing means sensing the position of the cutting assembly so that said box will be located beneath the working area of said cutting assembly, and the movable suction box is provided with means for reducing the speed of jets directed from the flame cutters towards the interior of said suction box and laden with gases, fumes, dust, minute particles and like polluting matter.

4,058,300

CLAY GUN

Pierre H. Mailliet, Howald, and Jean Metz, Luxembourg, both of Luxembourg, assignors to S.A. des Anciens Etablissements Paul Wurth, Grand Duchy, Luxembourg

Filed July 2, 1976, Ser. No. 702,120
Claims priority, application Luxembourg, July 4, 1975, 72902
Int. Cl.² C21B *7/12*
U.S. Cl. 266—273 **9 Claims**



1. In an apparatus for plugging tapholes in a blast furnace, the taphole plugging apparatus including a hydraulic piston actuator, the improvement comprising:

means defining a taphole sealant receiving cylinder, said sealant receiving cylinder having a side wall and first and second oppositely disposed ends and being provided at the first end with a sealant ejection port;

means for delivering sealant to the interior of the cylinder of said sealant receiving cylinder defining means, said delivering means including a supply port in the side wall of said cylinder defining means, said supply port being displaced from the ejection port;

ejector piston means disposed within the cylinder of said sealant receiving cylinder defining means, said piston means including a piston movable to either side of said delivering means supply port;

piston rod means extending into the cylinder of said sealant receiving cylinder defining means through the second end of said cylinder, said rod means coupling said ejector piston means to the hydraulic actuator whereby the actuator controls the movements of said piston means;

casing means extending into the cylinder of said sealant receiving cylinder defining means from the second end thereof, said casing means being coaxial with and located exteriorly of said piston rod means, said casing means cooperating with the inner surfaces of the side wall and the second end of said cylinder to define an annular recess at the second end of said cylinder, a rearwardly facing surface of said piston means piston closing the end of said annular recess when said piston means is at its limit of movement toward the sealant receiving cylinder second end; and

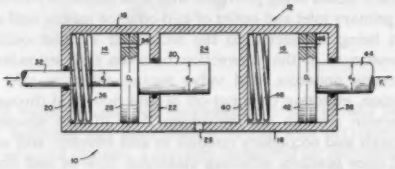
means for removing sealant from the annular recess defined in part by said casing means, said removing means including at least a first aperture located entirely in the portion of the side wall of said cylinder which cooperates to define said annular recess.

4,058,301

LOAD LIMITER COUPLING

Edwin M. Petrisko, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1976, Ser. No. 691,181
Int. Cl.² F16F *9/16*
U.S. Cl. 267—124 **5 Claims**



1. A load limiter coupling for transmitting and absorbing loads comprising:

a hollow cylinder means having at least three chambers formed by fixed partition walls and the end walls of said cylinder means,

first means within said cylinder for initially rigidly transmitting a tensile load force up to a design maximum; and

second means within said cylinder for initially rigidly transmitting a compressive load force up to a design maximum load, and then absorbing compressive loads in excess of said maximum.

4,058,302

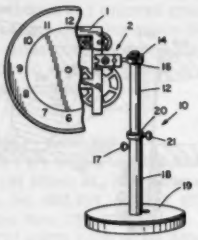
BENCH HOLDER FOR A CLOCK

Robert F. Barrowcliff, 3262 Rustic Drive, Santa Clara, Calif. 95051

Filed May 17, 1976, Ser. No. 686,710
Int. Cl.² B23Q *1/04*
U.S. Cl. 269—76 **5 Claims**

1. In a clock holder having an elongated clock support shaft,

the improvement comprising a pair of parallel-disposed, clock-mechanism, platelike holding jaws, a jaw support rod rigidly fixed to one jaw and projecting therefrom, coupling means adjustably supporting the second jaw on the first jaw for a parallel opening and closing movement of the jaws and including a pair of screws with each screw housed within a different jaw to engage receiving threads formed in the opposite jaw, and means serving as a support stand and formed with one or more socket receiving holes to receive the jaw support rod and thereby position the jaws and any clock mechanism clamped thereby at a desired position.



4,058,303

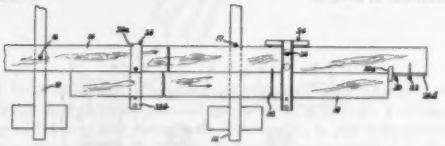
TRUE CUT COMBINATION

Ervin Besler, 2992 Fairweather Drive, Medford, Oreg. 97501

Filed Apr. 21, 1977, Ser. No. 789,527

Int. Cl.² B25B *11/02*

U.S. Cl. 269—315 **9 Claims**



1. A beam cutting assembly for use in conjunction with a pair of work-piece supporting sawbucks, an auxiliary length of timber supported by the sawbucks, and a hand carried circular saw, said assembly comprising,

a. an end stop attachable to the auxiliary length of timber for controlling the position of the leading end of the beam to be cut,

b. a saw guide attachable to the auxiliary length of timber for determining the line of cut, and

c. a carrier attachable to the auxiliary length of timber between the sawbucks for supporting the tail end of the beam during cutting when the beam has been rendered too short to extend from sawbuck to sawbuck.

4,058,304

CYLINDER FOLDER

Richard Gregory Foley, Dayton, Ohio, assignor to Harris Corporation, Dayton, Ohio

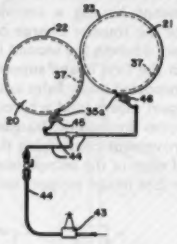
Filed Oct. 7, 1976, Ser. No. 730,439

Int. Cl.² B65H *45/20*

U.S. Cl. 270—79 **4 Claims**

1. In apparatus for zig-zag folding a flexible web, including a pair of driven cylinders disposed in parallel adjacent relation and adapted to receive the web therebetween, cooperating means on each cylinder for folding the web alternately on alternate cylinders at longitudinally spaced intervals along the web in response to rotation of the cylinders, and stripper means for each cylinder for engaging a folded portion of the web to deflect and guide the folded web portion from each respective cylinder, the web forming a gap between itself and the cylinder as it is stripped therefrom, the improvement comprising:

stationary means disposed adjacent the circumferential walls of the cylinders and independent thereof for injecting a flow of air under pressure into the gap formed between a folded web portion and a respective cylinder as the stripper means engage and separate the folded web from the cylinders, for aiding the release of the web.



4,058,305

PAPER FEEDING DEVICE

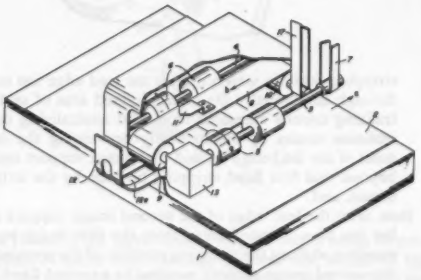
Masaaki Harada, Atsugi, Japan, assignor to Rank Xerox Ltd., London, England

Filed Aug. 16, 1976, Ser. No. 709,036

Claims priority, application Japan, Sept. 25, 1975, 50-114857

Int. Cl.² B65H *3/42, 5/02*

U.S. Cl. 271—16 **2 Claims**



1. A paper feeding device for feeding sheets individually from the top of a sheet stack comprising:

first and second counter-rotating rollers adapted to drive the ends of the top sheet in the stack towards each other to form a buckle therein; and,

belt means disposed above said stack, the belt path being substantially parallel to the axis of said rollers, said belt means having a hook member associated therewith adapted for contact with the buckled portion of the top sheet, movement of the belt causing the hook member to feed the buckled sheet from the stack in a direction substantially parallel to the axis of said rollers.

4,058,306

DETACK AND STRIPPING SYSTEM

Gerald M. Fletcher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 24, 1976, Ser. No. 689,277

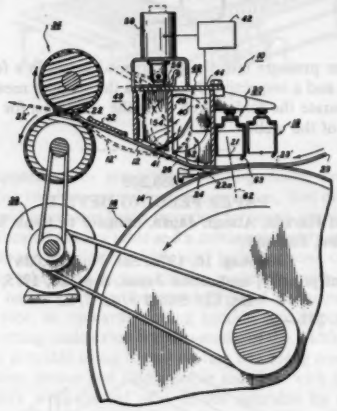
Int. Cl.² B65H *29/20*

U.S. Cl. 271—80 **10 Claims**

1. In an electrostatic image reproduction system wherein an image on a first image support surface member is transferred to

a second image support surface member at a transfer station by means of electrostatic transfer means leaving an electrostatic transfer charge on the second image support member, and wherein the second image support member is then subjected to transfer charge neutralizing corona emissions by movement through a defined corona emission area from neutralizing corona emission means having a corona emitting element therein to neutralize the transfer charge on the second image support member, and wherein the second image support member is stripped from the first image support member by stripping means and transported away from said first image support member with transport means, and wherein said second image support member moves through the transfer station with a lead edge first, the improvement comprising the steps of:

stripping the lead edge of the second image support member away from the first image support member at a first fixed



stripping position which is after the lead edge has moved through substantially the entire defined area of said neutralizing corona emissions from said neutralizing corona emission means by mechanically preventing the movement of the lead edge on said first image support member beyond said first fixed stripping position by the stripping means, and

then, after the lead edge of the second image support member has been stripped away from the first image support member, shifting the stripping position of the remainder of the second image support member to a second fixed stripping position intermediately of said defined area of corona emissions by holding a portion of the second image support member on the transport means at a fixed position spaced relative to the first image support surface and the transfer charge neutralizing corona emitting element.

4,058,307

FEED AND TAKEOFF ASSEMBLY

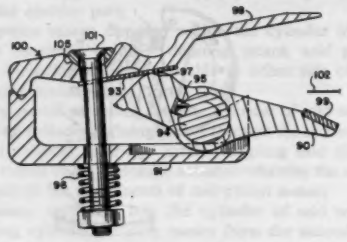
Henry J. Bubley, Deerfield, and John R. Krutsch, Glenview, both of Ill., assignors to American Screen Printing Equipment Company, Chicago, Ill.

Continuation-in-part of Ser. No. 628,151, Nov. 3, 1975. This application Aug. 23, 1976, Ser. No. 716,761

Int. Cl.[2] B65H *29/10*

U.S. Cl. 271—85 **4 Claims**

1. In a gripper assembly particularly adapted for use with a printing press having a printing head for the controlled transfer of sheet stock, the improvement comprising gripper jaw means having at least one upper jaw and at least one lower jaw, each of said upper jaw and said lower jaw having a forward portion, each of said forward portions being movable away from the other to an open position and movable toward the other to a closed position, a camming means integral with said lower jaw for pivotal movement about an axis generally parallel to a leading edge of said sheet stock, said upper jaw being biased against said camming means by resilient means to assure responsive contact between said camming means and said upper jaw, said camming means pivotable about said axis to displace said forward portions of said upper jaw and said lower jaw into



said open position for accepting sheet stock, said camming means being thereafter movable about said axis to return said upper jaw and said lower jaw to a closed position for gripping said sheet stock for subsequent transfer by the movement of said gripper assembly.

4,058,308

APPARATUS FOR STACKING SUBSTANTIALLY FLAT ARTICLES

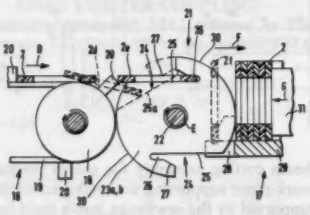
Johannes Lörsch, An der Bleiche 49, D-4172 Straelen, Germany

Filed Apr. 5, 1976, Ser. No. 673,870

Claims priority, application Germany, Apr. 11, 1975, 2515789

Int. Cl.[2] B65H *29/40*

U.S. Cl. 271—178 **4 Claims**



1. Apparatus for stacking substantially flat articles that are rigid at least in a region of the edges of the articles, comprising:

receiving means, an article receiving shaft contained in said receiving means, said receiving means including an elastic back-biasing means for applying a counter-force to articles stacked in said receiving shaft;

feed-in means including driver means for moving said articles toward said receiving means;

said feed-in means and said receiving means being in-line to each other, a stacking position of said articles being transverse to a plane of the in-fed articles;

cam means rotatably disposed between said feed-in means and said receiving means for deflecting in-fed articles toward said receiving shaft;

rotation of said cam means being synchronized with movement of said feed-in means;

said cam means including at least one curved guide portion maintained against a deflected one of said articles and pressing said deflected articles into said receiving shaft;

an axis of rotation of said cam means being substantially parallel to an in-fed article, and transverse to a direction of movement of said feed-in means;

said cam means further including first and second cam plates separated from each other on the axis of rotation, each of said cam plates including a guide portion and receiving and deflecting recesses cut in said plates for said articles,

said recesses having a width corresponding to the thickness of said articles and angularly displaced from said guide portion of said plates in a direction of rotation of said plates, said cam plates passing through recesses in a bottom portion of said receiving means and projecting up to at least an area of said receiving and deflecting recesses, said articles being thereby clamped by said cam plates at the recesses cut therein and oriented transversely to said bottom portion of each receiving means during rotation of said plates, the guide portion of said plates then urging said articles into said receiving means as said articles are released from said recesses.

4,058,309

BOWLING PIN WIRE GUIDE SLEEVE

Walter T. Hunley, 6134 Music St., New Orleans, La. 70122

Continuation of Ser. No. 603,911, Aug. 12, 1975, abandoned.
This application Nov. 23, 1976, Ser. No. 744,389
Int. Cl.[2] A63D *5/08*; B23P *7/04*
U.S. Cl. 273—43 D **3 Claims**

3. In combination, a bowling pin wire guide having a pair of laterally spaced apart parallel guide wires joined by a closed loop at the top and being bent rearwardly, a pin wire guide sleeve comprising a longitudinally extending straight web the length of which exceeds one half the length of the parallel guide wires, pin wire guide engaging means extending from each side of the web adapted to slip over and engage opposite front and rear sides of the spaced apart parallel guide wires below the bend of said closed loop and confine the spaced apart guide wires within the pin wire guide engaging means to provide longitudinal support and positive front and rear engagement of said sleeve and said parallel guidewire in the area of any breaks along said parallel guide wires, and said longitudinally extending web being concave on one of its sides.

4,058,310

BOWLING BALL INCLUDING A MEANS FOR DISPLACING THE CENTER OF GRAVITY

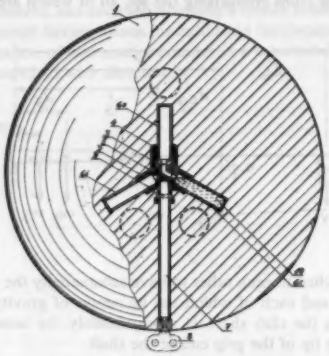
Seppo I. Miettinen, Helsinki, Finland, assignor to The United States of America as represented by the Department of Commerce, Washington, D.C.

Filed Oct. 28, 1975, Ser. No. 626,548
Int. Cl.[2] A63B *43/04*
U.S. Cl. 273—63 E **4 Claims**

1. In a bowling ball, a means for displacing the center of gravity, comprising

within the ball, substantially at its geometrical center, a three-way valve, wherefrom radiate three tubes with one closed end, at least one of these tubes lying substantially in the vertical plane passing through the geometrical centre of the ball and through the centermost of its three finger holes,

enclosed in said system of tubes and valve, a quantity of a heavy fluid substantially equivalent to the capacity of one tube and which can be selectively made to enter any one of said three tubes with the aid of the three-way valve and of gravity action, and a mechanical member shaped as a



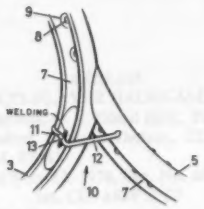
stem, with the aid of which the position of the three-way valve is controllable from the outer surface of the bowling ball.

4,058,311

METAL FRAME RACKET

Lenard W. Atkins, 60A Port Road, Alberton, Australia

Filed June 9, 1976, Ser. No. 694,474
Int. Cl.[2] A63B *49/02*
U.S. Cl. 273—73 G **3 Claims**



1. A racket of the metal frame type, the racket being formed of a piece of metal tube forming the head and handle of the racket, the tube being formed to merge progressively from the handle into the head, the head being completed by an infill piece bridging the two portions forming the handle at the throat of the racket, the tube being formed of a re-entrant groove extending around the outside of the racket, characterized by a stengthening U-shaped clip bridging each angle formed by the infill piece joining the handle portions, each strengthening clip having a pair of arms straddling the handle portions and the infill piece and a re-entrant portion to enter the groove of the tube of the handle portion, and being welded thereto so that when a twisting action tends to occur on the frame, the strengthening member resists this action while not inhibiting the flexing action of the racket.

4,058,312

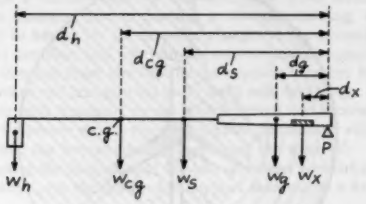
GOLF CLUB

Alfred Stuff, Ridgewood, and Anthony Pellizzi, Franklin Lakes, both of N.J., assignors to The Square Two Golf Corporation, Oakland, N.J.

Filed Sept. 5, 1974, Ser. No. 503,474
Int. Cl.[2] A63B *53/00*
U.S. Cl. 273—77 A **5 Claims**

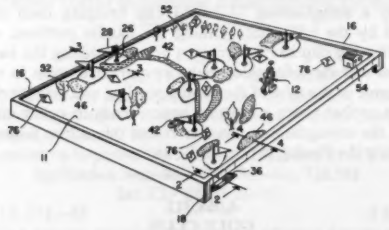
1. A set of golf clubs comprising a plurality of irons or woods, or both, wherein each of the clubs in the set has a shaft

of different length and a club head immovably affixed thereto with each of said club heads having a unique loft angle, said set without designed incremental differences in total weight between the clubs comprising the set, all of which are balanced



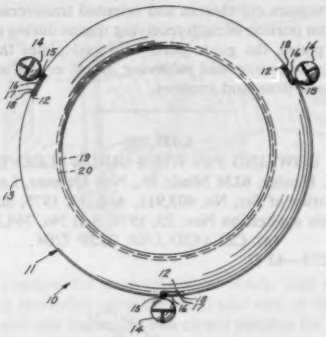
and matched to each other to have substantially the same total weight, and each of which has its center of gravity, as measured on the club shaft, at approximately the same distance from the tip of the grip end of the shaft.

4,058,313
GOLF GAME
Fred Spradlin, P.O. Box 1054, Bonita Springs, Fla. 33923
Filed May 24, 1976, Ser. No. 689,361
Int. Cl.[2] A63F *7/06*
U.S. Cl. 273—87.4 **7 Claims**



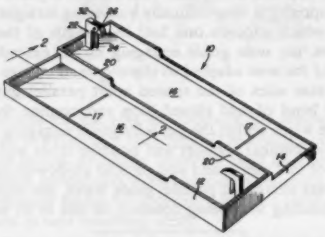
1. A miniature table top game comprising at least one miniature player and a golf course including a structural supporting surface, bounding reenforcing edges, simulated grass surface, at least one sand trap, at least one water trap, and an underneath ball return system, the water trap comprising a removable water container having at least one anti spill upper lip, for insertion into a matching cutout in the structural surface.

4,058,314
HOOP AND DISC WITH SOUNDERS
Frank K. Wolf, 3228 N. Sacramento, Chicago, Ill. 60618
Filed Jan. 6, 1977, Ser. No. 757,483
Int. Cl.[2] A63B *65/10*
U.S. Cl. 273—106 B **5 Claims**



1. A game, comprising a separatable combination of a tubular and circular ring and a disk, said ring having removably received thereon, musical sound producing means, and said disk is provided with fixed sound producing means.

4,058,315
MARBLE SHOOTING GAME
Arthur A. Guise, Jr., Rte. 1, Box 465, Chauvin, La. 70344
Filed Dec. 31, 1975, Ser. No. 645,707
Int. Cl.[2] A63F *7/00*
U.S. Cl. 273—118 R **2 Claims**

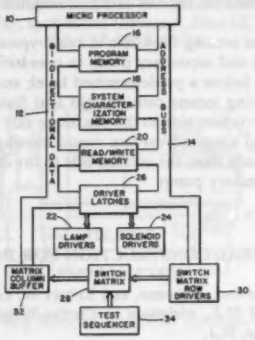


1. A game apparatus comprising; means for playing a game with marbles with a reduced chance of losing the marbles including, a game board with sides, support means on said game board for supporting a first marble thereon, and additional means associated with the support means functioning as a target and which when hit by another marble will project said first marble onto the surface of the game board, said support means including a stand structure attached vertically to one end of said game board and having a marble-holding indentation at the top thereof, said additional means including a target lever associated with the supporting stand structure to actuate a marble-disengaging lever on said support stand structure when the target lever is hit by another marble, said target lever being pivotally supported between parallel ears on the support stand structure which form the indentation therebetween for supporting the first marble and allow said first marble to be projecting off the support when the target lever is actuated by being hit by another marble.

4,058,316
ELECTRONIC CONTROL AND TEST CIRCUIT FOR PINBALL TYPE GAMES

Anthony J. Miller, Skokie, Ill., assignor to The Seeburg Corporation, Chicago, Ill.

Filed Nov. 17, 1976, Ser. No. 742,634
Int. Cl.[2] A63D *13/00*
U.S. Cl. 273—121 A 10 Claims



1. A control and test circuit for electronic pinball type game devices having lights, ball switches, ball ejectors and score display means responsive to movement of a pinball over the game surface, said circuit comprising

a. driver means for operating specified lamps and ball ejectors,

b. a switch matrix means having a plurality of switches connected thereto, said switches being operated by ball contact with various locations on said game surface,

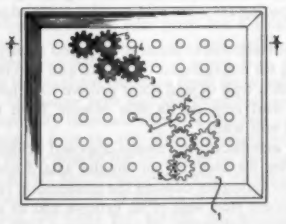
c. computer means for monitoring said switch matrix means and controlling said driver means and said score display means responsive to detecting switch operation in accordance with a program therefor, and

d. test sequencing means connected to said switch matrix means for causing said computer means to sequentially operate each light, ejector, and switch position to test said game, said sequencing means including means for repetitively testing a given light, ejector or switch position before proceeding to the next test position.

4,058,317
APPARATUS FOR PLAYING A BOARD GAME

John Brian McCarthy, 13 Coolnevaun, Kilmacud, Dublin, Ireland

Filed June 22, 1976, Ser. No. 698,322
Claims priority, application United Kingdom, June 23, 1975, 26575/75
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—130 R 13 Claims

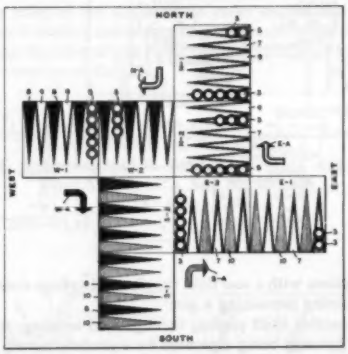


8. An apparatus for playing a board game, said apparatus comprising at least two sets wherein one of said sets is distinguishable from another of said sets, each set having a plurality of counters each capable of rotatable positioning upon a base plate, said base plate having a regular of positioning means for rotatably receiving said counters said positioning means being spaced equally, each counter having surface means for providing driving engagement with any of said counters positioned adjacent thereof, and each set including a master counter, each master counter having means for indicating the required direction of rotation of said master counter in a selected clockwise and counter-clockwise direction.

4,058,318
MULTI-PLAYER BACKGAMMON

Robert Melvin Thomas, 43 E. Edsall Blvd., Palisades Park, N.J. 07650, and Robert Edward Thomas, 222 Lakeside Drive, Hopatcong, N.J. 07843

Filed May 12, 1976, Ser. No. 685,586
Int. Cl.[2] A63F *3/02*
U.S. Cl. 273—134 AD 8 Claims



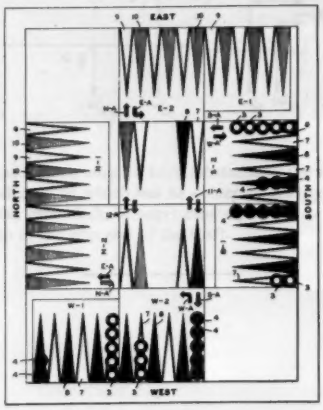
3. A multi-player backgammon game board for the play of at least three players, said game board consisting of forty-eight playing points contained in eight boards of six playing points each, wherein the boards are aligned in relation to each other to allow each player to move his playing pieces through his two boards and through two other contiguous boards played by another player.

4,058,319

MULTI-PLAYER BACKGAMMON

Robert Melvin Thomas, 42 E. Edsall Blvd., Palisades Park, N.J. 07650, and Robert Edward Thomas, 222 Lakeside Drive, Hopatcong, N.J. 07843

Filed May 12, 1976, Ser. No. 685,588
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—134 AD 16 Claims



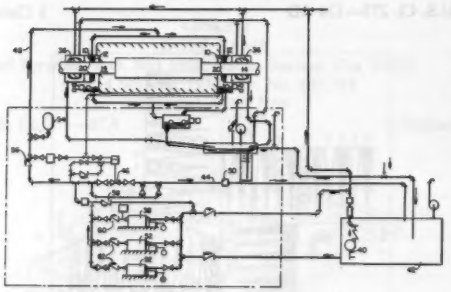
1. A multi-player backgammon game board having the rectangular configuration of FIG. 1 of the drawings and having on its surface the eight board pattern and the central playing area shown in said FIG. 1.

4,058,320

GENERATOR SEAL OIL SUPPLY SYSTEM

Nicholas S. Kosanovich, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 26, 1976, Ser. No. 708,815
Int. Cl.[2] F16J 15/40
U.S. Cl. 277—3 8 Claims



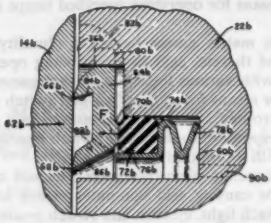
1. A system with a seal fluid supply, said system comprising:
a. a housing containing a gas;
b. a rotatable shaft passing through said housing, said shaft and housing being separated by a predetermined gap;
c. means for sealing said predetermined gas against gas leakage therethrough;
d. a fluid reservoir;
e. a primary pump with its suction side in fluid communication with said fluid reservoir;
f. first conduit means of fluid communication between the discharge side of said primary pump and said sealing means;
g. second conduit means of fluid communication between said sealing means and said fluid reservoir;
h. bypass means for providing fluid communication between said first conduit means and said fluid reservoir;
i. a secondary pump with its suction side in fluid communication with said fluid reservoir and its discharge side in fluid communication with said first conduit means;
j. means for maintaining a predetermined pressure differential between the fluid in said first conduit means and said gas;
k. means for sensing flow rate in said bypass means and for signaling said secondary pump to operate when said flow rate falls below a predetermined level; and
l. first valving means causing said seal fluid to flow only from the suction side to the discharge side of said primary pump and a second valving means causing said seal fluid to flow only from the suction side to the discharge side of said secondary pump.

4,058,321

OIL SEAL CONSTRUCTION FOR ROTARY MECHANISMS

Michael T. Gavrun, Bayonne, and Robert W. Loyd, Jr., Wyckoff, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Oct. 12, 1976, Ser. No. 731,691
Int. Cl.[2] F16J 15/34
U.S. Cl. 277—81 P 4 Claims



1. A rotary mechanism having a housing with a pair of spaced end walls and an intermediate wall to define a cavity therebetween and a piston rotor mounted for relative rotation within said housing cavity with the end faces of said piston rotor being disposed adjacent to said housing end walls and at least one of said rotor end faces having an annular groove, an annular side seal construction comprising:
a. a one-piece seal ring receivable within said rotor annular groove for axial movement relative thereto and having a pair of radially-spaced, annular, axially-projecting disposed generally at an angle radially inward, and portions having relatively sharp annular outer edges for sealing engagement with the adjacent housing end wall, the overall axial dimension of the seal ring being less than the radial spacing between said annular outer edges of the seal ring;
b. a ring of elastomeric material disposed axially behind said seal ring for engagement therewith and also being engageable with a wall of said rotor groove to minimize leakage around said ring on its side remote from the adjacent housing end wall;
c. annular metallic spring means disposed behind said elastomeric ring for applying an annular axial force against the elastomeric ring for causing the elastomeric ring to engage the adjacent side wall of its groove and to urge the seal ring axially outwardly of said groove with the effective region of application of said axial force on said seal ring being radially between its said radially-spaced annular outer edges,
d. an L-shaped annular retainer means disposed adjacent to said elastomeric ring to restrain the elastomeric ring

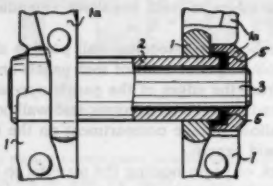
against radial movement away from the rotor groove side wall engageable by said elastomeric ring and for transmitting axial spring force against the elastomeric ring.

4,058,322

BEARING SEAL FOR ENDLESS TRACKS

Carl Fass, Ennepetal-Voerde, Germany, assignor to Intertrac Viehmann & Co., Gevelsberg, Germany

Filed June 1, 1976, Ser. No. 691,444
Claims priority, application Germany, June 12, 1975, 2526327
Int. Cl.[2] F16J *15/34*
U.S. Cl. 277—96.1 4 Claims



1. A sealing ring made of a resilient material, comprising in combination:

a. a first radial side having a concave annular face;

b. a second, axially opposite radial side having a concave annular face;

c. a radially inner axial face provided with a circumferential groove; and

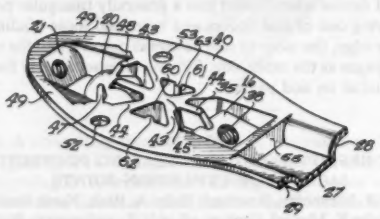
d. a collar having an outer cylindrical face defining the outer diameter of the sealing ring; said collar extending axially in the direction of orientation of said first radial side and having a free circular terminal edge projecting axially beyond said first radial side.

4,058,323

DIE CAST ROLLER SKATE SOLE PLATE

Robert R. Ware, Jr., River Forest, Ill., assignor to Chicago Roller Skate Company, Chicago, Ill.

Filed Apr. 23, 1976, Ser. No. 679,717
Int. Cl.[2] A63C *17/00*
U.S. Cl. 280—11.1 R 3 Claims



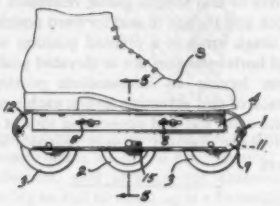
1. A lightweight, strong sole plate for a roller skate and formed of small crystalline structure cast metal, the plate including a raised periphery, an action screw boss, a front truck ball socket, a longitudinal rib of uniform cross section extending between the screw boss and the front ball socket, and at least two diagonally disposed ribs of a uniform cross section, each rib extending from the sole plate periphery on a given side of the action screw boss to the periphery on an opposite side of the front ball socket and crossing the other diagonally disposed rib and the longitudinal rib at a given point between the action screw boss and the front ball socket, the uniform rib thicknesses encouraging relatively small crystalline structural growth during solidification of liquid metal into the cast metal sole plate, the periphery and the two diagonal ribs together defining two recesses, one recess located on either side of the longitudinal rib, and the periphery defining auxiliary bead formations extending into the recesses sufficiently to prevent lodgement of shot peening materials in the recesses during sole plate casting cleaning.

4,058,324

ROLLER SKATE WITH MANEUVERABILITY ADJUSTMENTS

Lucien Dallaire, 165 - 35th St., East, St. Georges de Beauce, Quebec, Canada (G5Y 2P7)

Filed Jan. 30, 1976, Ser. No. 653,652
Claims priority, application Canada, Feb. 5, 1975, 219451
Int. Cl.[2] A63C *17/06*
U.S. Cl. 280—11.22 3 Claims



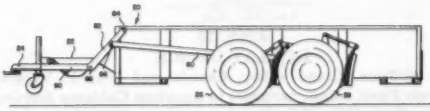
1. A roller skate adapted to be mounted against the bottom of a shoe, comprising an elongated roller carrier in the form of an open bottom casing defining a pair of laterally spaced-apart upright longitudinal sides, a pair of lateral members extending along the sides of said roller carrier and having upper horizontal flanges provided with transverse slots, means extending through said transverse slots and into the bottom of a shoe to secure said lateral members to said shoe while allowing lateral adjustment of the same with respect to said shoe, said lateral members including vertically extending portions applied against the opposite sides of said elongated roller carrier having longitudinally extending slots, bolt means projecting through said longitudinally extending slots and arranged to adjustably position and secure the roller carrier to said lateral members, an odd number of rollers rotatably carried by the elongated roller carrier and extending between the sides of the latter, one of said rollers being a middle roller, means to adjustably set said middle roller up and down relative to the other rollers, said means including an excentric bushing on which said middle roller is rotatable, said excentric bushing mounted between the sides of said roller carrier and a bolt extending through holes of the sides of said roller carrier and through said central bushing and supporting said bushing and roller and tightening the sides of said roller carrier against said bushing to prevent rotation of the latter.

4,058,325

ELEVATING TRAILER

Arthur G. Schramm, 3111 E. Highland, Phoenix, Ariz. 85016

Filed May 3, 1976, Ser. No. 682,625
Int. Cl.[2] B62D *32/00*
U.S. Cl. 280—43.18 6 Claims



1. In an elevatable trailer; a frame having a forward end and opposite sides; a pair of bell crank arms each pivotally mounted on said frame on a horizontal axis at each opposite side of said frame; said horizontal axes of said bell crank arms being spaced apart relative to each other in a direction relative to said for-

ward end of said frame; wheels rotatably mounted on said bell crank arms in spaced relation to said respective horizontal axes; cantilever members fixed to said bell crank arms and having end portions extending a substantial distance upwardly from said horizontal axis; connecting rods pivotally coupled to said end portions of said cantilever members; an actuating lever pivoted to said frame on each side thereof at a location between the pivotal axes of said bell crank arms; a cross bar having opposide ends pivotally coupled to said actuating levers; a tongue coupled to said cross bar and having a forward end extending beyond said forward portion of said frame; a hitch coupled to said forward end of said tongue; a tongue guide carried by said forward portion of said frame; said tongue reciprocally mounted to move to forward and rear positions relative to said tongue guide; releasable latch means disposed to lock said tongue in said forward position for holding said bell crank arms in a pivoted position wherein said frame and said horizontal axes are in elevated position; and an equalizer lever having an intermediate portion pivotally mounted on each of said actuating levers; each equalizer lever having opposite ends; and said connecting rods at each side of said frame pivotally coupled to said opposite ends of said equalizer levers.

4,058,326

SKI BINDINGS

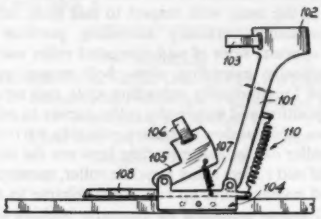
Antonio Faulin, V.Giovanni da Procida 4, Milan, Italy

Filed June 2, 1975, Ser. No. 583,027

Claims priority, application Italy, June 7, 1974, 23711/74; Jan. 10, 1975, 19193/75

Int. Cl.[2] A63C *9/00*

U.S. Cl. 280—617 **9 Claims**



1. A ski binding comprising a base element for rigid connection to a ski, a rigid elongated element including a shaped portion at one end for at least partially enveloping a skier's leg at the shin-bone, said rigid elongated element being pivotally connected at the other end to said base element for rotation about an axis extending perpendicularly to the longitudinal axis of the ski and parallel to the plane of the ski, a second element connected to said base element in a position for embracing the metatarsus of the skier's foot and removably maintaining the sole of the skier's foot in contact with the ski, and a plate-like element rigid with said base element at the forward portion thereof, said plate-like element having a shaped upper surface for mating engagement with the sole of the skier's footwear.

4,058,327

DISPLAY DEVICE

Peter Sullivan, Grand Valley, Canada, and John P. Yackel, Circle Pines, Minn., assignors to American Guidance Service, Inc., Circle Pines, Minn.

Filed Nov. 1, 1976, Ser. No. 737,349

Int. Cl.[2] B42D *3/16*

U.S. Cl. 281—33 **9 Claims**

1. A compact book-like storage and display device comprising a one-piece molded synthetic resinous casing and a stack of a plurality of pages bearing the material to be displayed loosely bound to one free edge of said casing, said device further characterized by:

A. a front cover and a back cover each integral with and hingedly connected to opposite sides of a relatively narrower spine, said covers being generally flat and semi-rigid and said spine being generally arcuate in transverse cross-section and rigid;

B. one of said covers being a compound cover composed of two generally flat and semi-rigid panels each having an angularly extending end wall portion;

C. the first of said panels being integral with and hingedly connected on one side to the spine and integral with and hingedly connected on the other side to the other panel along the edges of said angularly extending end wall portions;

D. a perpendicularly extending wall portion along the top and bottom edges of both of said panels and spaced inwardly from the edges of the panels opposite the angularly extending end wall portions, said wall portions defining a shallow storage compartment on the inner face of each of said panels;

E. said stack of pages bearing the material to be displayed being loosely bound to the free edge of said other panel opposite from its hinged connection to the first panel and outside of said storage compartment thereon, said loose binding lying generally along a line parallel to the spine, being loose enough to permit the pages to be folded against either side of said other panel, and comprising a plurality of perforations along one side edge of said stack of pages and the adjacent side edge of said other panel to which the pages are bound;

F. at least one generally annular fastening element extending through contiguous perforations of said pages and panel;

G. positive latching means provided adjacent the edge of said other panel on the inner surface thereof adjacent to the perpendicular wall portion and adjacent to said loose binding, said latching means comprising a plurality of spaced apart perpendicular projecting tabs spaced from said perpendicular wall portion by about the thickness of said front cover, whereby the free edge of said front cover is engageable between said perpendicular wall portion and said tabs;

H. said device when closed forming a generally flat book-like storage unit; and

I. said device when folded into a generally triangular prism, having one of said covers as a base, said loose binding as one edge, the other of said covers as one side and the stack of pages as the other side, forming an easel display for the material on said pages.

4,058,328

HEAT-RESPONSIVELY SELF-SEALING PROTECTIVE JACKET FOR EXPANSION JOINTS

Harvey R. Nickerson, Roseland; Helm A. Rink, North Haledon, and John K. Menzel, Orange, all of N.J., assignors to Resistoflex Corporation, Roseland, N.J.

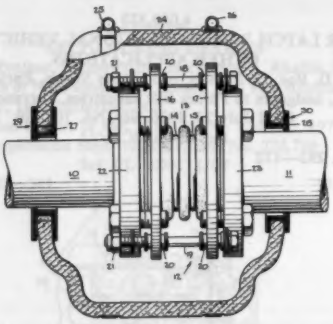
Filed Oct. 29, 1976, Ser. No. 736,778

Int. Cl.[2] F16L *11/12*

U.S. Cl. 285—45 **10 Claims**

1. A fire-safe jacket for protecting a joint in a fluid piping system which joint is capable of expanding or flexing or both, said jacket comprising a plurality of segments of refractory material joinable around said joint to form an enclosure thereabout with an air gap between the exterior of said joint and the interior of said enclosure, said segments being so configured and dimensioned as to provide when assembled a respective opening through which adjacent piping components pass to and from said joint, said respective openings each having a diameter greater than the outside diameter of said corresponding adjacent piping component, and a gland in the form of a ring covered with a layer of intumescent material inserted

within each of said respective openings for substantially bridging the radial gap between said opening and said correspond-



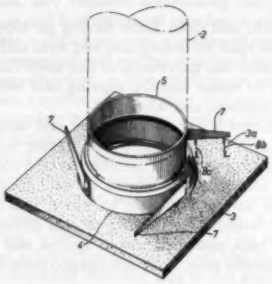
ing adjacent piping component passing therethrough, said ring making a sliding fit with the latter.

4,058,329

CONNECTING PIECE FOR MOUNTING A VENTILATION ELEMENT IN AN OPENING IN A CEILING OR WALL

Leif Johansson, Ganglaten, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed June 8, 1976, Ser. No. 693,763
Claims priority, application Sweden, June 16, 1975, 7506894
Int. Cl.² F16L *41/00*
U.S. Cl. 285—162 **8 Claims**



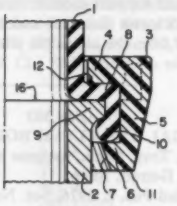
1. A connecting piece for mounting a ventilation element in an opening in a ceiling or wall slab, said connecting piece comprising a cylindric shell having stop means extending outward in a common radial plane on the front side to abut the front surface of the slab surrounding said opening, and clamp means cooperating with the stop means to secure the connecting piece in the opening, characterized in that the clamp means comprises a plurality of elongated wings of a resilient flexible material, mounted at one end on the outer surface of said shell and normally tangentially projecting outwardly from the shell outer surface so that upon the insertion of the connecting piece into the opening, the wings may be flexed inwardly to lie circumferentially along the shell surface, each wing having a front edge portion facing toward the stop means with a spacing from said common radial plane which increases with the distance from the point of mounting, whereby the wings after their passage through the opening due to their resilience will be straightened so that the front edge portions abut the rear surface of the slab surrounding the opening and thereby together with the stop means secure the connecting piece on ceiling or wall slabs of different thicknesses.

4,058,330

COUPLING ARRANGEMENT

Franz-Josef Wolf, D-6483 Bad Soden-Salmunster, Sprudelallee 19, Germany

Filed Apr. 12, 1976, Ser. No. 675,962
Claims priority, application Germany, May 3, 1975, 7514275; Nov. 19, 1975, 2551939
Int. Cl.² F16L *55/00*
U.S. Cl. 285—174 **7 Claims**



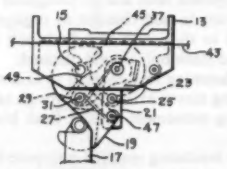
1. An arrangement for coupling an elastic structural member to an inherently stable structural rigid member by means of a fastening element, said arrangement comprising an elastic member having an end terminating in a flexurally elastic flange and a rigid member having a bend-resistant flange, the flanges being adapted to be joined to one another, an edge of the flexurally elastic flange of the elastic structural member projecting beyond an edge of the bend-resistant flange of the rigid structural member and carrying a bulge thereon at the terminal end thereof, and a fastening element having a flange and a skirt and adapted to be pushed axially from the direction of the elastic member over the flanges of the elastic and the rigid structural members when they are in abutment in such a way that a bottom face of the skirt inverts the projecting edge of the flexurally elastic flange with its bulge which faces away from the direction in which the fastening element is pushed around the edge of the bend-resistant flange and the skirt forces the inverted bulge beyond the bend-resistant flange and toward said rigid member so that said bend-resistant flange is captured between said bulge and non-inverted portion of the elastic flange while the flange of the fastening element rests on the non-inverted portion of the flexurally elastic flange.

4,058,331

REMOTELY ACTUATED TWO STAGE STRUCTURAL LATCH

George W. Koonce, Fort Worth, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 29, 1976, Ser. No. 738,496
Int. Cl.² E05C *19/10*
U.S. Cl. 292—97 **4 Claims**



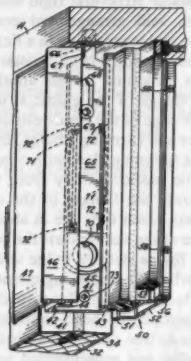
1. A remotely actuated two stage structural latch comprising, in combination, a support housing, a main shaft passing through and rotatable in said housing, a first link having one end pivotally attached to one end of said main shaft, an S shaped hook member pivotally attached to the other end of said first link, a second link having one end attached to said main shaft for pivotting on a common axis with said first link, a first pivot pin disposed on the other end of said second link,

a third link having one end pivotally attached to said second link for pivotting around said first pivot pin, the other end of said third link being pivotally attached to a second pin on said S shaped hook, a third pin fixedly attached to said support housing, a clevis pin in spaced alignment with said third pin, and means for rotating said main shaft to produce a corresponding rotation of said first link causing said S shaped hook to rotate and engage said third pin and said clevis pin, further rotation of said S shaped hook member operating to draw said clevis pin and said support member nearer together when the rotation is in clockwise direction and operating to release the support member from the clevis pin when the rotation is in the counterclockwise direction.

4,058,332
ASTRAGAL AND FLUSH BOLT ASSEMBLY

Joseph DiFazio, Troy, Mich., assignor to Acorn Building Components, Inc., Detroit, Mich.

Filed Feb. 2, 1976, Ser. No. 654,444
Int. Cl.² E05C *1/04, 7/04*
U.S. Cl. 292—147 **8 Claims**



1. In an astragal assembly to be secured to a relatively stationary member such as a door jamb, or the edge of an inactive door or the like, said astragal including a generally flat elongated body to be mounted on said stationary member and a stop member secured to said body along one edge thereof to limit swinging movement of a relatively active door member, the improvement comprising:

first and second spaced apart elongated legs formed integrally with said flat body and extending outwardly therefrom away from said relatively stationary member, the flat body and legs together defining an outwardly opening channel to receive and retain a slidable flush bolt;

said slidable flush bolt being a thin, flat elongated member having opposed sides and an elongated slot therethrough;

resilient means in said channel to engage each side of said flush bolt to slide with said flush bolt and to frictionally retain said flush bolt in said channel;

means for fastening said channel to said stationary member;

said fastening means extending through said slot for limiting the sliding movement of said flush bolt in said channel; and

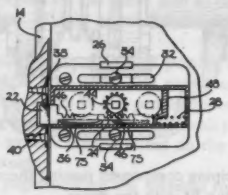
a thermally insulating material interposed between said stop member and said body, said stop member being secured to one edge of said thermally insulating material and said second leg being connected to the other edge of said thermally insulating material so that said thermally insulating material forms a thermal barrier between the astragal body and the astragal stop member;

said stop member preventing swinging of said relatively movable door past the relatively stationary member in a first direction and said first leg of said channel cooperating with said door latch to prevent swinging movement of said relatively active member past said relatively stationary member in the opposite direction.

4,058,333
DOOR LATCH FOR RECREATIONAL VEHICLE AND OTHER APPLICATIONS

Forrest D. Roe, La Mirada, and Sidney Simon, Encino, both of Calif., assignors to Perma Bilt Industries, Torrance, Calif.

Filed July 23, 1976, Ser. No. 708,220
Int. Cl.² E05C *1/12*
U.S. Cl. 292—172 **8 Claims**



1. A door latch having special utility in recreational vehicles and the like comprising:

a latch housing, said latch housing having a toothed rack assembly, a gear member rotatably coupled thereto, and an elongated shaft member;

a retractable bolt member having an extended and a retracted position, said bolt member coupled to said rack such that movement of said rack in a predetermined direction causes said bolt member to move into said retracted position;

a slideable bar member disposed across said housing, said bar member selectively positioning said elongated shaft in said housing;

a door knob, said door knob having an elongated hollow stem, said shaft extending into said stem and being secured therein such that movement of said knob causing said gear member to rotate thereby moving said bolt into said retracted position; and wherein,

a flexing means is disposed between said latch housing and said toothed rack assembly, said flexing means for yieldable coupling said gear member to said toothed rack assembly such that movement of said door knob in one direction causes said bolt to move into said retracted position without any flexing of said flexing means, said toothed rack assembly presses against said flexing means and is thereby selectively disengaged from said gear member.

7. A door latch having special utility in recreational vehicles and the like comprising:

a latch housing, said latch housing having (i) first and second toothed rack assemblies; (ii) first and second gear members, said tooth rack assemblies being slidably disposed in said housing such that said gear members are disposed thereinbetween, and (iii) an elongated shaft disposed in said first gear assembly wherein said first gear is a working pinion gear and said second gear is a stablizing pinion gear, said first and second gears maintaining said first and second racks in a parallel and spaced apart configuration;

a retractable bolt member having an extended and a retracted position, said bolt member disposed in said housing between said first and second rack assemblies such that movement of either of said racking assemblies causes said bolt to move into said retracted positions;

a door knob, said door knob having an elongated hollow stem, said shaft extending into said stem and being secured therein such that movement of said knob causes said first gear member to rotate thereby moving said bolt into said retracted position; and

wherein a spring means is circumferentially disposed about said shaft and adjacent said working pinion gear such that

said working pinion gear is rendered selectively disengageable from said rack assembly thereby permitting lateral movement of said door knob.

4,058,334

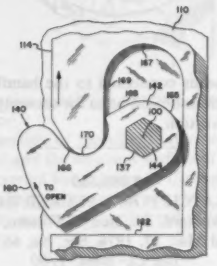
SELF-LOCKING DEVICES

Joseph E. Prather, Bernardsville, and Ramzi A. Khalifa, Rutherford, both of N.J., assignors to Edson Tool and Manufacturing Company, Inc., Belleville, N.J.

Continuation-in-part of Ser. No. 676,509, April 13, 1976. This application Sept. 16, 1976, Ser. No. 723,710

Int. Cl.² E05C *3/04*

U.S. Cl. 292—241 **13 Claims**



1. A self-locking device for locking a movable structural member to a stationary structural member, or to another movable structural member, or for unlocking the same, comprising: a first structural member; a second structural member which is movable in a first or opening direction; a rotatable self-locking cam and an actuating means therefor capable of rotating said self-locking cam, said rotatable self-locking cam being rotatably mounted on said first structural member; a curved surface on said rotatable self-locking cam, capable of contacting and preventing movement of said second structural member in said first or opening direction; a cam surface on said rotatable self-locking cam, capable of contacting and moving said second structural member in said first or opening direction; an ear on said second structural member, said actuating means being capable of rotating said rotatable self-locking cam in an angular direction, whereby said cam surface on said rotatable self-locking cam contacts said ear on said second structural member to forcibly move said second structural member in said first or opening direction, while said curved surface on said rotatable self-locking cam is being simultaneously moved out of the way of said second structural member, due to the angular rotation of said rotatable self-locking cam to permit the movement of said second structural member in said first or opening direction to move and to unlock said second structural member from said first structural member; an angular rotation-limiting plate having surfaces extending into the path of rotation of said rotatable self-locking cam, with one surface located on one side of the center of rotation of said rotatable self-locking cam and another surface located on the other side of the center of rotation and said rotatable self-locking cam and located such that said rotatable self-locking cam is capable of rotation of from about 50° to about 270° and being mounted on said first structural member to contact the sides of said rotatable self-locking cam and limit the angular rotation of said rotatable self-locking cam during the unlocking and opening of said second structural member within a prescribed degree of angularity, said surfaces being located on said angular rotation-limting plate such that said rotatable self-locking cam rotates between said surfaces and is always in an operative position when in its open position for self-closing and locking of said self-locking device, and then, said ear on said second structural member subsequently becoming an actuating means during the closing and locking of said second structural member to said first structural member and being subsequently capable of rotating said rotatable self-locking cam in an angular direction opposite to that of said first angular direction, whereby said second structural member returns to its original closed and locked position, wherein it is prevented from movement in said first or opening direction by said curved surface on said rotatable self-locking cam.

4,058,335

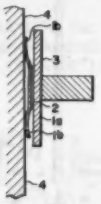
MAGNETIC SHEET THE MAGNETIC ATTRACTION OF WHICH IS STRENGTHENED

Seiji Abe, 8-1-305, Fukuzumi 2-chome, Koto, Tokyo, Japan

Filed Jan. 27, 1976, Ser. No. 652,706

Int. Cl.² E05C *19/16*

U.S. Cl. 292—251.5 **8 Claims**



1. A magnetic sheet comprising:
a mounting base; and
magnetic sheet means attached at the central portion thereof to one side of said mounting base for attracting said mounting base to a magnetically attractive surface, the ends of said magnetic sheet around said central portion being flexible and free from said mounting base.

4,058,336

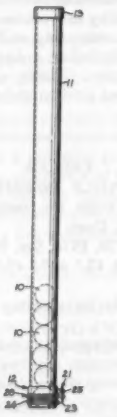
DEVICES FOR PICKING UP BALLS

Sydney Parkinson, 8 Pine Grove, Ashton-on-Mersey, Sale, Cheshire, England

Filed Apr. 23, 1976, Ser. No. 679,762

Int. Cl.² A47F *13/06*

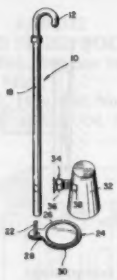
U.S. Cl. 294—19 A **8 Claims**



1. A device for picking up balls comprising: a tube having, at one end, a ball retainer arrangement including a pawl tooth resiliently loaded towards an operative rest position projecting inwardly of the tube and pivotable in a direction away from the said one end to an inoperative position free of the tube interior, the ball retainer arrangement including a knob means disposed externally of the tube for permitting the pawl tooth to be

pivoted manually into the inoperative position against its resilient loading, the knob means being connected with the pawl tooth by way of a neck providing a recess for location therein of a resilient band extending circumferentially around the said one end of the tube for loading the pawl tooth into the operative position.

4,058,337
ANIMAL LITTER COLLECTION UNIT
Mircea Isac, 59-28 Madison St., Brooklyn, N.Y. 11227
Filed Nov. 2, 1976, Ser. No. 738,260
Int. Cl.[2] A47F *13/06*
U.S. Cl. 294—19 R **4 Claims**



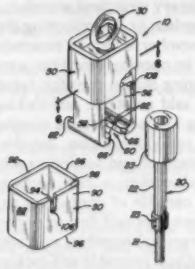
1. An animal litter collection unit comprising:
an upright cane-like implement having an inner shaft telescopically received within an outer tubular sleeve, means rotatably securing said inner shaft to said outer sleeve, said inner shaft having a handle at one end thereof for carrying said implement and for rotating said inner shaft relative to said outer sleeve,
an inverted container,
means slidably connecting said inverted container to said outer sleeve,
a lid for said container, and
means slidably mounting said lid to the other end of said inner shaft so it can be rotated to a position beneath said container and removed along with said container from said cane-like implement upon rotation of said inner sleeve and downward sliding movement of said container,
said means slidably connecting said inverted container to said outer sleeve including a double clamp, said clamp having a first portion slidably mounted on said outer sleeve, and a second portion slidably retaining said container.

4,058,338
HANDLE ASSEMBLY
Richard N. Brown, Macungie, Pa., assignor to General Electric Company, Bridgeport, Conn.
Filed Oct. 28, 1976, Ser. No. 736,505
Int. Cl.[2] A47J *45/07*
U.S. Cl. 294—31.2 **5 Claims**

1. A handle assembly for securing a handle on a utensil comprising:
a. a flexible band positioned around said utensil, said band having a central portion and two end portions, each of said end portions being shaped to include an elongated leg portion and a foot portion arranged generally perpendicular to the leg portion;
b. a block for holding said band in assembled position on said utensil, said block having end wall means and side wall means, two slots formed in said side wall means arranged generally parallel to each other for receiving the leg portions of said band, one leg portion being positioned in one of said slots with its foot portion being in engagement with the end wall means of the block and the other leg portion being positioned in the other slot with its foot portion being positioned in engagement with the foot portion of the other end of the band;
c. a handle having a socket for receiving said block and the end portions of said band; and

d. fastening means connected to the handle, the block and the end portions of said band for securely holding them in assembled position.

4,058,339
PIVOTAL LATCH FOR A SUCKER ROD PULLER
William Boyd Burchard, Jr., Box Y, Folsom, N. Mex. 88419
Filed Mar. 17, 1976, Ser. No. 667,874
Int. Cl.[2] B66C *1/00*
U.S. Cl. 294—91 **15 Claims**



1. A sucker rod puller having means attached thereto for connecting to a means for elevating the sucker rod, said sucker rod puller comprising:
a latch having activated and deactivated states,
a main body receptive of said sucker rod, said latch being disposed in said main body in the deactivated state and
a sleeve over said main body, said sleeve being held in a first position by said activated state of said latch for containing said sucker rod and capable of being manually retained in a second position for maintaining said latch in said deactivated state, said sleeve defining the outer perimeter of said puller in said activated and deactivated states and said latch being inward of said perimeter in said activated state.

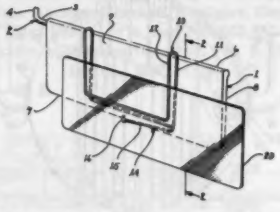
4,058,340
RETAINER FOR SUN VISOR EXTENSION
David Pinkas, 15239 Agua Fria Drive, Sun City, Ariz. 85351
Filed Apr. 8, 1976, Ser. No. 675,148
Int. Cl.[2] B60J *3/02*
U.S. Cl. 296—97 G **6 Claims**

1. Apparatus for retaining a slidably positionable sun shield adjacent one surface of a vehicle mounted sun visor, said apparatus comprising in combination:
a. a rectangular wire frame for partially transversely circumscribing the sun visor, said wire frame being folded upon itself to extend across one edge of the sun visor and define

a first and second U-shaped section for exerting a gripping force upon opposed sides of the sun visor;

b. a leg supported by said first U-shaped section and having a free end extending transverse to another edge of the sun visor for securing said wire frame about the sun visor; and

c. a prong disposed at the free end of said leg for engaging the surface of the sun visor adjacent said second U-shaped



section to maintain said leg transverse to the other edge of the sun visor;

whereby, on insertion of the shield intermediate said second U-shaped section and the adjacent surface of the sun visor, the gripping force exerted by said second U-shaped section retains the shield parallel and adjacent the sun visor while accomodating longitudinally and laterally directed slidable movement of the shield.

4,058,341

COLLAPSIBLE CHAIRS

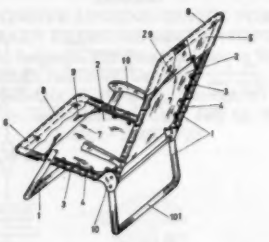
Johannes Prins, Burg. v. Veenlaan, 411 Enschede, Netherlands

Filed Apr. 9, 1976, Ser. No. 675,632

Claims priority, application Germany, Sept. 17, 1975, 2541385

Int. Cl.[2] A47C *4/00*

U.S. Cl. 297—39 **1 Claim**



1. A collapsible item of furniture for lying or sitting thereon comprising

a back rest,

a seat or lying base 28,

a front leg pivoted centrally to the seat,

an arm rest pivotally connected at one end to the upper end of the front leg, said arm rest being pivotally connected to its other end to said back rest, said front leg collapsible toward the rear leg when said chair is folded,

leg means including two posterior leg portions,

an articulation means connecting said back rest and said base and said posterior leg portions.

said articulation means comprising a first extension portion connected to said base,

a second extension portion connected to said back rest,

a third extension portion connected to said posterior leg portion,

a first serrated means on said second extension portion turnable about an axis to pivot said back rest, a second serrated means on said third extension portion in continual meshed engagement with said first serrated means and rotatable about an axis to pivot said posterior leg portions, said first and second serrated means being in continual meshed engagement for simultaneously and concurrently driving and turning engagement with each other and to concurrently pivot said back rest and said posterior leg portions simultaneously, said articulation means comprising two bowl-shaped base members for encapsulating said first and second serrated means, said first extension comprising rigid extensions formed on said bowl-shaped base members, stub shafts carried by said bowl-shaped base members and defining the respective axes for said first and second serrated means, and said bowl-shaped base members having recesses therein defining slots through which project said second and third extension.

4,058,342

CHILD'S CAR SEAT

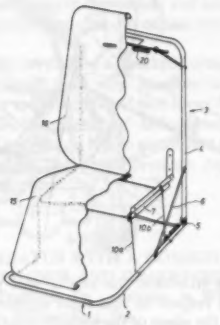
John P. Ettridge, 14 Somers St., North Brighton, South Australia, Australia (5048)

Filed Nov. 10, 1976, Ser. No. 740,615

Claims priority, application Australia, Nov. 14, 1975, 3966/75

Int. Cl.[2] A47C *1/032*

U.S. Cl. 297—250 **4 Claims**



1. A child car seat comprising a base frame adapted to rest on a vehicle seat, a back rest frame extending upwardly and rearwardly therefrom so that the base frame and back rest frame are at a suitable angle to each other conforming to the general angle of the car seat itself, characterised by a seat frame and a seat back pivoted to each other, the seat frame being attached to the base frame by pairs of parallel links, and the seat back toward its upper end is linked to the back rest frame by a link extending therebetween, the parallel linkage moving the seat frame downwardly and forwardly in a parallel manner from a sitting to a reclining position, with the seat back moving also downwardly and forwardly at its bottom to increase its angle of inclination to a reclining position upon such downwardly and forwardly movement of the seat frame, and locking means to restrain the seat frame and seat back in their respective desired positions relative to the base frame and back rest frame by a locking link extending between the seat frame and the base frame.

4,058,343

CONCRETE TRANSPORTING AND PLACING VEHICLE WITH LATERALLY SHIFTABLE BODY

Glenway W. Maxon, III, Milwaukee, Wis., assignor to Maxon Industries, Inc., Milwaukee, Wis.

Filed Jan. 25, 1977, Ser. No. 762,242

Int. Cl.[2] B60P *1/30*

U.S. Cl. 298—9 **11 Claims**

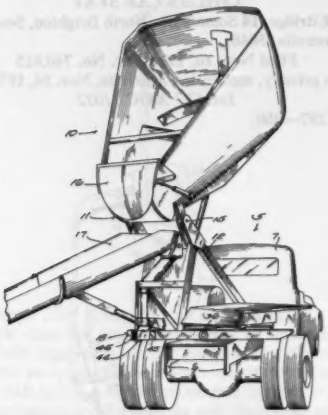
1. In a material transporting vehicle of the type having a chassis and a body especially designed to hold a sizable volume of material to be transported, mounted on a body frame having parallel sides and front and rear ends, the body having a discharge mouth at one end thereof, and means mounting the body frame with the body thereon on the chassis of the vehicle in a manner that enables the discharge mouth of the body to be

directed to either side of the chassis without substantially shifting the center of gravity of the loaded body with respect to the chassis, said means comprising:

A. rigid supporting structure fixed with respect to the chassis, said structure including cantilevered arms that project laterally beyond the sides of the chassis at spaced intervals along the length thereof, said cantilevered arms as well as the rest of said rigid structure having coplanar top surfaces;

B. the body frame having a bottom surface all portions of which lie in a common plane and slidably set upon the coplanar top surfaces of said rigid structure;

C. pivot means connecting the body frame with said rigid



supporting structure, the axis of said pivot means being fixed with respect to said rigid supporting structure and normal to the plane of the slidably engaged surfaces of the body frame and rigid supporting structure and substantially intersecting the center of gravity of the body; and

D. power means reacting between the body frame and the chassis, operable to swing the body frame about the axis of said pivot means from a transport position parallel with the sides of the chassis to either a right or left diagonally disposed position, in each of which the discharge mouth of the body is spaced laterally a substantial distance from the centerline of the vehicle chassis and in each of which the body frame is solidly supported by said rigid supporting structure.

4,058,344

GROUND ENGAGING MEMBER FOR MOVABLE STRUCTURES

James Dyson, Badminton, England, assignor to Kirk-Dyson Designs Ltd., London, England

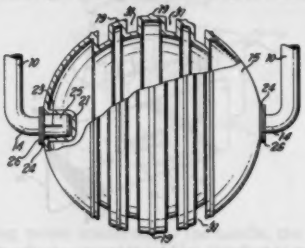
Filed Mar. 2, 1976, Ser. No. 663,218

Claims priority, application United Kingdom, Mar. 5, 1975, 9189/75

Int. Cl.[2] B60B 9/00

U.S. Cl. 301—7 **2 Claims**

1. A wheelbarrow comprising a frame and a supporting ground engaging ball member rotatably mounted therein, said ball member being molded in one piece from a plastic material consisting of a mixture of an ethylene-vinyl acetate co-polymer and a low density polyethylene with diametrically opposite sockets therein, a bearing assembly mounted in each of said sockets, said frame terminating in stub shafts adapted to fit a bearing assembly, said bearing assemblies each having an outer cup-shaped member non-rotatably mounted in a socket with said outer cup-shaped member terminating in an outer peripheral flange for engaging the outer surface of said ball member, said outer cup-shaped member being of a length less than the depth of said socket with the inner end of said cup-shaped member being spaced from the bottom of said socket upon the engagement of said peripheral flange with said ball member, an inner cup-shaped member non-rotatably mounted on said shaft and rotatably mounted in said outer cup-shaped member, said inner cup-shaped member terminating in an outer peripheral



flange engaging the outer peripheral flange of the outer cup-shaped member, said inner cup-shaped bearing being of a length less than said outer cup-shaped member with the inner end of said inner member being spaced from the inner end of the outer cup-shaped member upon the engagement of said flanges of said cup-shaped members.

4,058,345

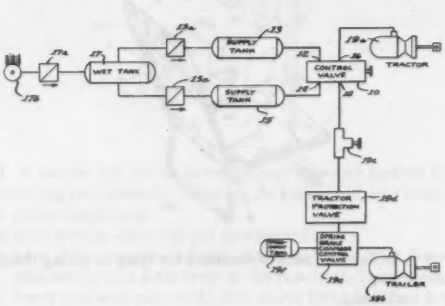
BRAKE APPARATUS INCLUDING CONTROL VALVE WITH INTEGRAL CHECK VALVE

Boleslaw M. Klimek, Des Plaines, Ill., assignor to The Echlin Manufacturing Company, Branford, Conn.

Filed Feb. 23, 1976, Ser. No. 660,492

Int. Cl.[2] B60T 13/38

U.S. Cl. 303—6 M **5 Claims**



2. Pneumatic apparatus adapted for use in a tractor-trailer braking system with first and second spring brake actuators and first and second pressure sources, said apparatus comprising:

a first control valve adapted for coupling to each of such pressure sources and to a first of such spring brake actuators, said first control valve including means for selectively providing exhaust pressure or pressure from such pressure sources at least partially in response to external force applied to said control valve and to pressure supplied by such pressure sources, said first control valve inhibiting communication between such pressure sources;

a second control valve connected to said first control valve, including an output port, said second control valve including means for selectively providing communication between said first control valve and said output port of said second control valve, at least partially in response to external force applied thereto and to pressure supplied by said first control valve; and

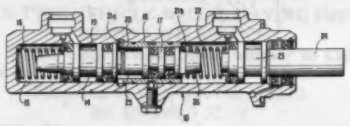
means connected to said output port of said second control valve, for supplying pressure to such second spring brake actuator at least partially in response to pressure at said output port of said second control valve.

4,058,346

MASTER BRAKE CYLINDER FOR MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Feb. 5, 1976, Ser. No. 655,552
Claims priority, application Germany, Feb. 5, 1975, 2504699
Int. Cl.[2] B60T 8/20
U.S. Cl. 303—22 R 15 Claims



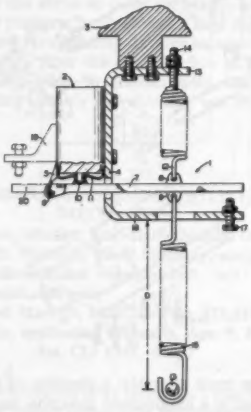
1. A master brake cylinder for two-circuit brake systems of motor vehicles, which comprises two cylinder and piston means for the two brake circuits disposed in tandem arrangement one behind the other and forming pressure spaces in the master brake cylinder, characterized in that the piston means for the front axle brake circuit has a larger diameter than the piston means for the rear axle brake circuit, and in that the pressure space in the master brake cylinder for the front axle brake circuit is connected with the pressure space in the master brake cylinder of the rear axle brake circuit by way of a connecting line means, and control means operable in dependence on the vehicle load and operative in said connecting line means.

4,058,347

LOAD-RESPONSIVE LINKING DEVICE FOR VEHICLE BRAKE PRESSURE REGULATORS

Erich Reinecke, Beinhorn, Germany, assignor to WABCO Westinghouse GmbH, Hannover, Germany

Filed July 15, 1976, Ser. No. 705,717
Claims priority, application Germany, July 16, 1975, 2531756
Int. Cl.[2] B60T 8/18
U.S. Cl. 303—22 R 8 Claims



1. A vehicle load-responsive linking device for use with a vehicle brake pressure regulator operable to a supply disposition for effecting supply of brake actuating fluid, said linking device being operably disposed between a sprung portion and an unsprung portion of the vehicle, on which the brake pressure regulator is mounted, and an unsprung portion of the vehicle and comprising:

a. a fulcrum lever having one end pivotally supported in a bearing carried on the brake pressure regulator;

b. a primary spring having one end connected to said sprung portion and the other end connected to said lever at an axial point between said one end and a free end of the lever for exerting a first force thereon in one direction normal to the axis of the lever;

c. a secondary spring having one end connected to said unsprung portion of the vehicle and the other end connected to said lever at said axial point thereof for exerting a second force thereon in an opposite direction relative to said one direction, said first force being variable according to the distance between the sprung and unsprung portions of the vehicle, according to vehicle load;

d. a piston rod having one end extending out of the brake pressure regulator, and against which piston rod end said one end of said lever is biased into abutting contact by said first force of the primary spring, said piston rod being axially movable in a direction corresponding to said opposite direction for effecting operation of the brake pressure regulator to said supply disposition and consequent corresponding angular displacement of said lever; and characterized by:

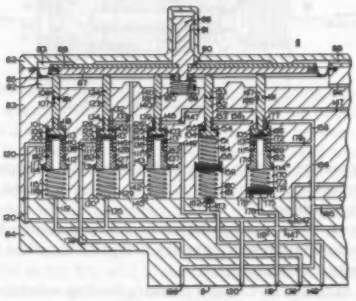
e. a stop member carried on a bracket portion on the brake pressure regulator, said stop member being abuttingly engageable by said free end of said lever for limiting said angular displacement thereof and, therefore, said axial movement of said piston rod to an amount coinciding with said operation of the brake pressure regulator to said supply disposition.

4,058,348

BRAKE APPARATUS WITH A COMBINED BRAKE CYLINDER AND RESERVOIR

James E. Hart, Trafford, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Mar. 4, 1977, Ser. No. 774,241
Int. Cl.[2] B60T 15/22
U.S. Cl. 303—35 32 Claims



1. A fluid pressure brake apparatus for controlling braking of a vehicle, said brake apparatus comprising:

a. a brake pipe normally charged to a chosen pressure,

b. braking means having:

i. a pair of fluid motors of unequal size, each having therein a movable abutment operatively connected to the movable abutment in the other fluid motor, said abutments being operative cojointly to effect a brake application to a degree in accordance with the sum of two differential fluid pressure forces acting in the same direction on the respective corresponding sides of said abutments,

ii. a one-way flow valve carried by the movable abutment of the larger fluid motor to enable flow of fluid under

pressure from a first fluid pressure storage reservoir provided in said larger fluid motor at one side of the larger abutment to a second fluid pressure storage reservoir at the other side of said larger abutment, and

iii. biasing means acting on said one side of said larger abutment and effective to normally bias both of said abutments to a brake release position, and

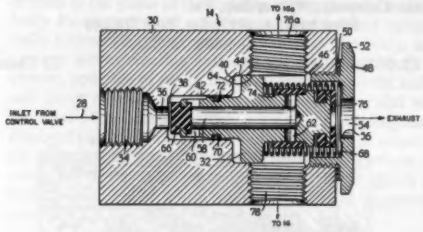
c. a brake control valve device having valve means operable in response to charging said brake pipe to said certain chosen pressure to effect the supply of fluid under pressure from said brake pipe to said first and second storage reservoirs and to one side of the smaller abutment and the release of fluid under pressure from the other side thereof, said valve means being operable in response to a reduction of the pressure in said brake pipe from said chosen pressure to simultaneously cause the release of fluid under pressure from said one side of said smaller abutment, and the release of fluid under pressure from said first fluid pressure storage reservoir at said one side of said larger abutment to reduce the pressure therein to a degree corresponding to the degree of reduction of the pressure in said brake pipe whereby fluid under pressure acting on the respective other side of said pair of tandem-arranged abutments establish a fluid pressure braking force corresponding to the sum of the respective differential fluid pressure forces acting on said respective other sides of said pair of tandem-arranged abutments.

4,058,349

PRESSURE HOLDING VALVE

John M. Ury, Milwaukee, Wis., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Sept. 29, 1976, Ser. No. 727,880
Int. Cl.² B60T *15/30*
U.S. Cl. 303—69 **6 Claims**



1. A pressure holding valve suitable to effect the application and removal of release air pressure to spring-actuated parking brakes comprising:

a. means for blocking the entry of air pressure into said pressure holding valve until a first predetermined input air pressure is attained;

b. an exhaust valve in said pressure holding valve for admitting atmospheric air pressure to said parking brakes;

c. means for closing said exhaust valve when said first predetermined air pressure is attained;

d. means for connecting said input air pressure to said parking brakes;

e. means for holding the air pressure in said parking brakes substantially equal to the highest input air pressure attained after said first predetermined air pressure is once exceeded and until the input air pressure decreases to a second predetermined level;

f. said second predetermined air pressure being lower than said first predetermined air pressure; and

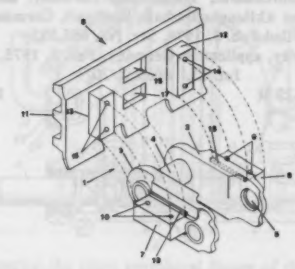
g. means for fully opening said exhaust valve when said second predetermined air pressure is attained whereby the brake air pressure is fully exhausted.

4,058,350

TRACK FOR CRAWLER TYPE VEHICLES

Evangelista Russo, Contrada Patrizia, 88050 Sellia Marina (Catanzaro), Italy (88050)

Filed Mar. 19, 1976, Ser. No. 668,632
Int. Cl.² B62D *55/20*
U.S. Cl. 305—54 **4 Claims**



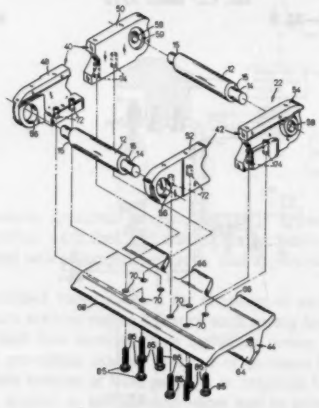
1. A track for crawler type vehicles comprising: track links having a longitudinal axis, each link being composed of bushings and a pair of link plates whose ends have a curved shape to permit each said link to rotate to both sides of the longitudinal axis of the links connected therewith; an external rim and an internal rim on each said link plate, each said external rim being higher than said internal rim; means on each said link plate to permit track shoes to be mounted on either of said rims of said link plates; and track shoes provided with attachments to fasten said track shoes to said link plates.

4,058,351

MASTER LINK ASSEMBLY HAVING TWO-PIECE LINKS

Bernard J. Murphy, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Continuation of Ser. No. 537,950, Jan. 2, 1975, abandoned. This application June 3, 1976, Ser. No. 692,592
Int. Cl.² B62D *55/28*
U.S. Cl. 305—54 **7 Claims**



1. In a crawler track assembly: a plurality of track link assemblies arranged in a longitudinal direction, each track link assembly comprising at least one link and connecting means for articulately connecting adjacent track link assemblies, one of said track link assemblies being a master link assembly and comprising: at least one master link comprising a pair of overlapping half-links arranged in side-by-side relationship, each half-link being articulately connected by connecting means to

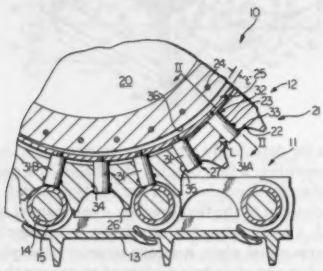
an adjacent track link assembly, a master track shoe overlying and confronting an edge of each half-link in said pair of half-links, each half-link having a pair of longitudinally spaced apart capscrew holes extending inwardly from said edge and in registry with capscrew holes in said master track shoe, and capscrews for securing said master track shoe to said pair of half-links and connecting said pair of half-links in fixed relationship to each other and to said master track shoe, each capscrew being disposed in a capscrew hole in said master track shoe and a registering capscrew hole in a half-link, said capscrews and said master track shoe being the sole connecting means between each pair of overlapping half-links.

4,058,352

TRACK-TYPE VEHICLE WHEEL HAVING IMPACT RESISTANCE MEANS

John W. Sogge, Cedar Rapids, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 9, 1976, Ser. No. 712,562
Int. Cl.² B62D *55/16*
U.S. Cl. 305—57 **9 Claims**



1. A wheel of a track-type vehicle, comprising:
a hub;
a rim having an outer surface and a plurality of generally radially extending openings and being connected to the hub, said rim having an annular chamber, said openings of the rim opening into said chamber;
an annular spring of hoop configuration positioned in said chamber and being of a size sufficient for forcibly urging against the rim about its outer periphery; and
a plurality of plungers, each having a first end portion of a size sufficient for extending through an associated opening and outwardly from the outer surface of the rim and a second end portion in contact with said spring, said plunger being slidably movable into and from the chamber.

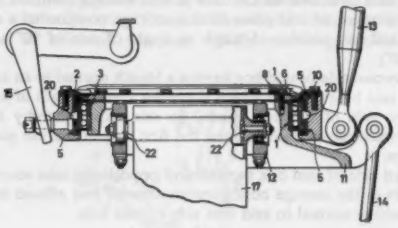
4,058,353

ROLLER BEARING ASSEMBLY WITH FAILSAFE MECHANISM

Hubert Frommlet, Munich; Karl-Heinz Mautz, Ottobrunn, and Klaus Brunsch, Weidach, all of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Mar. 29, 1976, Ser. No. 671,151
Claims priority, application Germany, Apr. 9, 1975, 2515414
Int. Cl.² F16C *44/02*
U.S. Cl. 308—1 A **12 Claims**

1. In a roller bearing assembly including a first race, a second race and bearing rollers operatively interposed therebetween, the improvement comprising a sliding ring arranged about one of said races and a melting ring interposed between said sliding ring and said one race, said melting ring being composed of material having a melting point higher than the normal operating temperature of said bearing, the material of said melting ring being such that it will melt when the operating temperature of the bearing rises above a normal operating temperature, with at least partial melting of said melting ring operating to



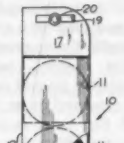
enable relative sliding motion between said one race and said sliding ring.

4,058,354

STORAGE CONTAINER FOR ROLLS OF TOILET TISSUES

Tadeusz Powaska, 166 Adelaide Ave. East, Oshawa, Ontario, Canada

Filed July 17, 1975, Ser. No. 596,758
Int. Cl.² B65H *19/00*; B65G *1/16*
U.S. Cl. 312—45 **8 Claims**



1. A toilet tissue roll storage container, comprising a pair of elongated spaced parallel side walls, a rear wall connected between said side walls, a front wall connected between said side walls in opposed relation to said rear wall, and top and bottom end closures, at least one pivotable closure member forming a section of said front wall pivotable to provide access to the interior of the container, a pair of integrally formed extension flaps secured at their respective bases to the top of the container, each of said flaps being bendable between a plane parallel to the top wall of the container and an extended vertical position and having means thereon cooperable with mating means associated with an external surface for mounting of said container in a predetermined location.

4,058,355

TELEPRINTER CONSOLE

Horst Stahl, Weidach, and Franz Thorand, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 15, 1975, Ser. No. 577,939
Int. Cl.² A47B *85/00*
U.S. Cl. 312—241 **4 Claims**

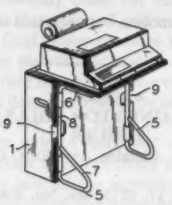
1. A portable console for storing and for setting up for use an apparatus, the console comprising:
a rectangular box having a one-piece first side;
a plate comprising a second side of said box adjacent said

first side and normal thereto in a storage configuration of the box;

hinge means connecting said plate swivelably about an edge of said first side of the box in the storage position for movement of said plate from a storage position to a selected use position through an angle of one of 90° and 270°;

the second side of said box having a length normal to an axis of said hinge means which is greater than a length of said first side of the box normal to said axis, whereby the second side extends beyond the first side in the use position;

a third side of said box parallel and opposite to said second side in the storage configuration thereof and affixed in a position normal to said first side of said box;



at least one bracket member swivelably mounted to an outer side of said third side of said box, said bracket comprising a tubular support portion extending in a plane of said first side for supporting said plate in a set-up position thereof and for use as a handle for moving the console in the storage configuration thereof, and a lower portion adapted to brace against a ground support surface;

at least one guide rail mounted on an inside surface of said box parallel to said first side, each said rail extending normally to said hinge means axis; and

said hinge means being movable along said rail for carrying said edge of said plate into said box and adjacent said third side of said box.

4,058,356

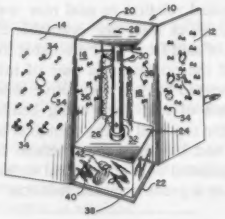
JEWELRY BOX

Dorothy Hamilton Michal, 14544 Cleveland Ave., Posen, Ill. 60469

Filed May 6, 1976, Ser. No. 683,698

Int. Cl.² A47B *88/00, 57/00;* B65G *11/04*

U.S. Cl. 312—305 **1 Claim**



1. A jewelry box comprising a vertically, elongated, rectangular box having sides, top and bottom, two of said sides being fixedly disposed between said top and bottom, the remaining two sides being hingedly mounted to the said first two sides to provide easy access to the interior of said sides, means on the inside of all of said sides for hanging various types of jewelry thereon, a shelf fixed to two said fixed sides a short distance above the bottom thereof forming a compartment between the shelf and the bottom, a transparent removable container positioned in and being of the same substantial size as a single vertically disposed tube positioned between said shelf and said top, means mounting said tube for rotation, fingers extending radially from said tube to hold jewelry, said top being provided with a slot over said tube so that coins may be dropped through said slot into said tube, and a pin removably installed transversely through said tube to provide a stop for coins deposited in said tube.

4,058,357

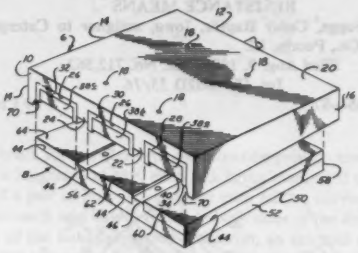
MAGNETIC RADIO MOUNTING BRACKET

Dewey K. Wallace, 812 Wateka, Richardson, Tex. 75209

Continuation-in-part of Ser. No. 672,186, March 31, 1976. This application Sept. 23, 1976, Ser. No. 725,796

Int. Cl.² H01R *11/30*

U.S. Cl. 339—12 R **12 Claims**



1. Means for detachably mounting an electronic device in a vehicle comprising: a first bracket attachable to a dash on the vehicle; a channel composed of a ferrous type metal; means to secure the channel to the first bracket; a bar magnet secured in the channel; a second bracket attachable to an electronic device; a ferrous metal plate; a means to secure the plate to the second bracket, the plate being adapted to engage the channel and the bar magnet on the first bracket; electrical connector means connected to the channels on said first bracket; electrical connector means connected to the ferrous metal plate; and guide means on the second bracket adapted to slideably engage a slot formed adjacent the channel on the first bracket.

4,058,358

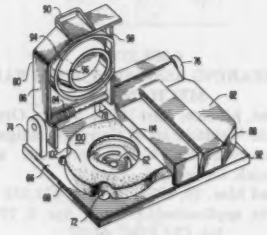
WET LOCATIONS COVER ASSEMBLY

Roger P. Carlisle, Liverpool, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed Apr. 5, 1976, Ser. No. 673.326

Int. Cl.² H01R *13/52*

U.S. Cl. 339—44 M **4 Claims**



1. A one-piece gasket for use with an apertured cover plate for a single electrical outlet box comprising an annular rib having an external circumferential groove therein adapted to receive the edge of the cover plate defining an aperture, a first radially inwardly directed flange adapted to engage a receptacle in the outlet box, a radially outwardly extending flange adapted to underlie the cover plate to seal the cover plate to the outlet box and a second radially inwardly extending flange

disposed parallel to and spaced from said first flange to engage a plug disposed in mating engagement with the receptacle and be engaged by a pivoted door on the cover plate in the absence of a plug to close the aperture in the cover plate.

4,058,359

APPARATUS FOR COPYING SHEET ORIGINALS

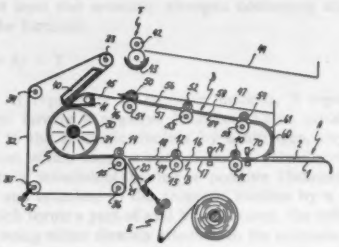
Godefridus H. Urselmann, Venlo, Netherlands, assignor to Ocevan der Grinten N.V., Venlo, Netherlands

Filed Jan. 28, 1974, Ser. No. 437,152

Claims priority, application Netherlands, Jan. 29, 1973, 7301199

Int. Cl.² G03B *27/12*

U.S. Cl. 355—109 **12 Claims**



1. In an apparatus for producing any number of copies of a sheet-shaped original fed thereinto, including (a) means for exposing the original with a copy sheet fed thereto; (b) means, including at least one pair of sheet feeding rollers, defining a first path for movement of the original to said exposing means; (c) a feed section for directing the original into said first path; (d) means for guiding a copy sheet in a path leading into said first path, for movement of the copy sheet to said exposing means with the original; (e) means defining a second path for movement of the original from said exposing means back into said first path; and (f) switching means operative in one position thereof to guide the original from said exposing means out of the apparatus, and operative in a second position thereof to guide said original into said second path; said second path and said first path together constituting a path of return movement of the original between said switching means and said exposing means; the combination which further comprises:

1. means operable to engage an edge of the original in said path of return movement for orienting the original so that a side edge thereof lies parallel to or in the direction required for alignment of said side edge with a side edge of a copy sheet guided in said copy sheet path;
2. means for displacing transversely of said first path the pair of said at least one pair of rollers that engages the original as it is moved into said first path;
3. means for sensing a lateral deviation between the actual location of a side edge of an original in said first path and the position thereof required for registration thereof with said side edge of said copy sheet; and
4. control means responsive to said sensing means to activate said roller displacing means so as to correct said lateral deviation.

4,058,360

SELF-FEATHERING PROPELLER

Carl R. Hirschberger, Laurel Ave., Brielle, N.J. 08730

Filed May 27, 1976, Ser. No. 690,577

Int. Cl.² B63H *1/20*

U.S. Cl. 416—140 **7 Claims**

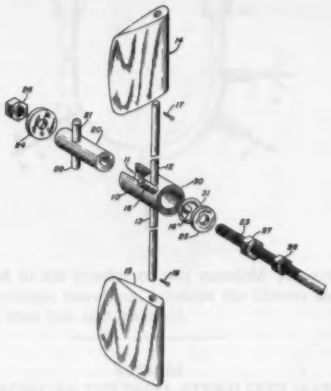
1. A self-feathering propeller comprising,

a. a tubular sleeve member having a pair of slots formed in one end thereof,

b. a pair of blades,

c. mounting means supporting the blades for free rotation about individual axes substantially normal to the axis of the sleeve member,

d. an elongated hub adapted for attachment to a shaft, said hub supporting the said sleeve member for rotation about its axis and carrying radially-extending pintles which



engage the side walls of said slots upon rotation of the hub relative to the sleeve member,

e. first stop means carried by the sleeve member and limiting rotation of the blades about their axes in one direction, and

f. second stop means carried by the hub and limiting rotation of the blades about their axes in the other direction.

4,058,361

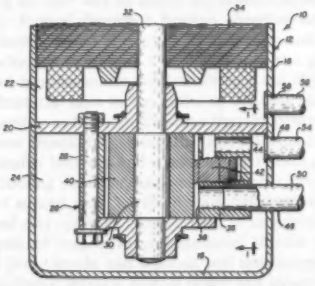
REFRIGERANT COMPRESSOR HAVING INDIRECT OUTLET CONNECTION

Angelo C. Giurlando, Sommerville, and David Richardson, Flemington, both of N.J., assignors to Fedders Corporation, Edison, N.J.

Filed Feb. 24, 1975, Ser. No. 552,189

Int. Cl.² F04B *21/00*

U.S. Cl. 417—312 **2 Claims**



1. A compressor construction comprising a sealed housing having a motor compartment and a compressor compartment; a motor in said motor compartment; a rotary compressor in said compressor compartment connected in driving relationship with said motor for compressing refrigerant fluid, said compressor unit having an inlet port adapted to receive low pressure fluid therethrough and an outlet port for the passage of high pressure fluid therethrough; said housing having a housing inlet port; a conduit extending between said housing inlet port and said compressor inlet port to provide a passage for the low pressure fluid; a housing outlet port in said compressor compartment aligned with said compressor outlet and

in spaced relationship thereto whereby said compressor refrigerant fluid is discharged from said compressor unit outlet port into said compressor compartment; and a desuperheater coil connected between said housing outlet port in said compressor compartment and said motor compartment, said desuperheater coil comprising a conduit connected to said housing outlet port and terminating short of said compressor unit to eliminate any direct connection therebetween.

4,058,362

PROTECTION OF METALS OR METAL CONTAINING ARTICLES

Robert A. Sinclair, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 12, 1974, Ser. No. 532,014
Claims priority, application United Kingdom, Jan. 3, 1974, 260/74
Int. Cl.[2] C23F *15/00;* C09K *15/04*
U.S. Cl. 21—2.5 R 13 Claims

1. A method for the protection of metal items which are susceptible to corrosion by acid vapors which comprises confining said metal item within an enclosure which does not allow free flow of gas from the enclosure to the environment and further including within the enclosure a black sorbent thermoset foam material made by the pyrolysis of a composition liquid at the pyrolysis temperature said composition comprising at least one aromatic nitrogen containing compound having the formula:

$$X - Ar - Y$$

wherein Ar represents an aromatic nucleus, X represents a substituent having a negative Hammett sigma constant and attached to the aromatic nucleus by a nitrogen, oxygen, or sulfur atom which forms a part of said X substituent, and Y represents a substituent having a positive Hammett sigma constant and attached to the aromatic nucleus by a nitrogen atom which forms a part of said Y substituent, the substituents X and Y being either directly attached to the aromatic nucleus or directly attached to a ring fused to the aromatic nucleus, the sorbent thermoset form having a specific surface area of at least 50 m^2/g, and said pyrolysis comprising heating said composition to initiate reaction of the said composition.

7. An enclosure for the protection of metal items which are susceptible to corrosion by acid vapors comprising a structure which confines gas sufficiently so as to not allow free flow of gas from the enclosure to the environment under stable conditions, said enclosure containing a black sorbent thermoset foam material made by the pyrolysis of a composition liquid at the pyrolysis temperature said composition comprising at least one aromatic nitrogen containing compound having the formula:

$$X - Ar - Y$$

wherein Ar represents an aromatic nucleus, X represents a substituent having a negative Hammett sigma constant and attached to the aromatic nucleus by a nitrogen, oxygen, or sulfur atom which forms a part of said X substituent, and Y represents a substituent having a positive Hammett sigma constant and attached to the aromatic nucleus by a nitrogen atom which forms a part of said Y substituent, the substituents X and Y being either directly attached to the aromatic nucleus, or directly attached to a ring fused to the aromatic nucleus, the sorbent thermoset foam having a specific surface area of at least 50 m^2/g, and said pyrolysis comprising heating said composition to initiate reaction of the said composition.

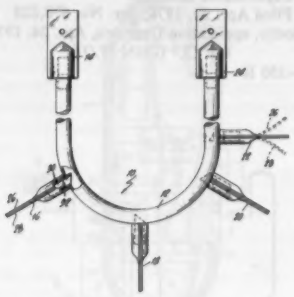
4,058,363

METHOD AND APPARATUS FOR STERILE HANDLING OF FLUIDS

Jerome A. Silbert, 444 E. 84th St., New York, N.Y. 10028

Division of Ser. No. 522,426, Nov. 11, 1974, Pat. No. 3,955,833, which is a continuation-in-part of Ser. No. 433,530, Jan. 15, 1974, abandoned. This application Feb. 25, 1976, Ser. No. 661,135
Int. Cl.[2] A61L *9/00*
U.S. Cl. 21—58 33 Claims

22. A method for the sterile handling of a sterile fluid in a container by an apparatus of the type having a sterile manifold normally sealed from the external environment comprising the steps of joining said container to one end of a sterile hollow connector having a sterile closure at the other end, inserting the closure end inside said manifold, forming a seal sterile from the external environment between said manifold and said closure end, introducing a sterilizing solution into said manifold, moving said sterilizing solution through said manifold to sterilize the interior of the manifold and the portion of said closure



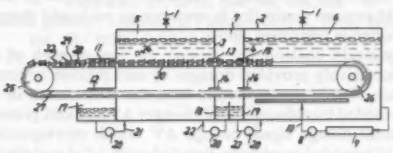
end exposed to the interior of said manifold, removing the sterilizing solution therefrom, breaking the closure and then moving the fluid into said manifold.

4,058,364

HIGH-PRESSURE THERMAL STERILIZER HAVING LIQUID RECIRCULATING MEANS

Masahiro Terumoto, Amagasaki, Japan, assignor to Q. P Corporation, Tokyo, Japan

Filed Nov. 11, 1975, Ser. No. 631,136
Claims priority, application Japan, Nov. 22, 1974, 49-134826; Oct. 7, 1975, 50-121636
Int. Cl.[2] A23L *3/04;* A61L *3/00*
U.S. Cl. 21—80 7 Claims



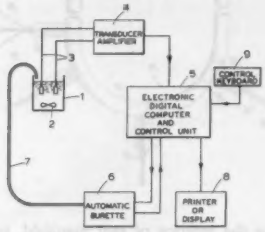
1. In a high-pressure sterilizer which has a high-pressure tank having an inlet and an outlet for objects to be sterilized and having formed therein a heating chamber which is to contain a heated liquid at a given level therein and a cooling chamber which is to contain a cooling liquid at a given level therein, and transfer means for transferring the objects to be sterilized from the inlet to the outlet of the tank through the heating chamber and cooling chamber thereby continuously to sterilize these objects by heating, the improvement comprising a space chamber between and separating said heating chamber from said cooling chamber, said space chamber being defined by a pair of spaced apart partition walls between said heating chamber and said cooling chamber, each of said partition walls having a pair of respective passage holes therein positioned below said given levels; and wherein said transfer means comprises an endless conveyor having upper and lower travelling portions passing linearly through said heating chamber, said cooling chamber and said space chamber, said upper and lower travelling portions being disposed in alignment with said passage holes formed in said pair of partition walls in opposed relation below the liquid levels in said heating and cooling chambers; at least two reservoir tanks provided within the space chamber to receive and segregate respectively heating liquid and cooling liquid as effluent liquids overflowing through said passage holes; and circulating means for recirculating the effluent liquids from said respective reservoir tanks back into said heating chamber and said cooling chamber, respectively.

4,058,365

PROCESS FOR AUTOMATIC TITRATION

Søren-Christian Krogh, Ganlose, Denmark, assignor to Radiometer A/S, Copenhagen, Denmark

Filed Apr. 20, 1976, Ser. No. 678,625
Claims priority, application Denmark, Apr. 24, 1975, 1802/75
Int. Cl.[2] G01N *31/16*
U.S. Cl. 23—230 R 12 Claims



1. A process for controllably obtaining titration in a chemical system by automatic control of successively provided titrant dosages to said chemical system after provision of at least one initial preselected size of titrant dosage, said process comprising the steps of

successively sensing a total of said titrant provided as a result of each of said successively provided dosages up to the time of the most recent provided dosage and successively providing a titrant dosage signal change ΔV to a process controller each time in response to the most recent provided dosage at said time,

successively detecting a change in chemical condition of said chemical system in response to each of said provided dosages and providing a transducer signal change ΔS to said process controller in response to each said detected change in condition, and

successively controllably varying the size of each of said successively provided dosages by said process controller each time in response to at least the most recent of said provided transducer signal changes ΔS and said provided titrant dosage signal change ΔV which corresponds to said provided transducer signal change ΔS at said time for successively reducing each of said titrant dosage sizes as the relationship $\Delta S/\Delta V$ increases and for increasing each of said titrant dosage sizes as said relationship $\Delta S/\Delta V$ decreases, whereby the titrant dosage size each time is a function of at least the most recent relationship $\Delta S/\Delta V$ at said time.

4,058,366

DETERMINATION OF FLOW CHARACTERISTICS OF PETROLIFEROUS FORMATIONS

Dale K. Cabbiness, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 643,286, Feb. 6, 1976, abandoned. This application Dec. 3, 1976, Ser. No. 747,451
Int. Cl.[2] G01N *33/24*
U.S. Cl. 23—230 EP 7 Claims

1. A method for determining the flow characteristics of subterranean petroliferous formations by simultaneously injecting a tracer and a polysaccharide polymer having glucose moieties into said formations, recovering said tracer and polysaccharide from production well effluent at timed intervals and determining flow characteristics by the rate differential observed between recovered tracer and polysaccharedi polymer, wherein the concentration of polysaccharide polymer is observed by;

a. hydrolyzing the polymer to liberate glucose,

b. reacting the liberated glucose with orthotoluidine, and

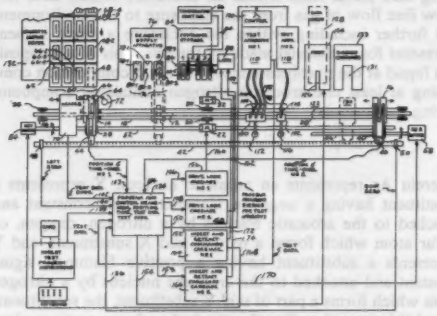
c. determining the polymer concentration using colorimetric determination.

4,058,367

AUTOMATIC ASYNCHRONOUS FLUID PROCESSING APPARATUS

Saul R. Gilford, Oberlin, Ohio, assignor to Gilford Instrument Laboratories Inc., Oberlin, Ohio

Continuation-in-part of Ser. No. 578,872, May 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 428,803, Dec. 27, 1973, abandoned. This application Aug. 19, 1976, Ser. No. 715,661
Int. Cl.[2] G01N *1/14, 33/16*
U.S. Cl. 23—253 R 63 Claims



1. Automated apparatus for processing fluids such as blood and the like for obtaining information relating to the physical and/or chemical properties thereof and providing a readout representative of such information, the apparatus being capable of performing different processes on different fluids not necessarily having the same processing time which comprises:

A. means defining a single processing path for said apparatus; means for supporting a plurality of containers each adapted to carry therein a sample of fluid to be processed along said path, any one process perhaps requiring a different processing procedure, each of the containers having respective indicia means identifying the sample adapted to be carried thereby and its processing procedure, the containers being arranged in said supporting means in a random order;

B. transport means for removing a first container from the supporting means, reading its indicia means and moving the same along said processing path in a first preselected pattern according to the processing procedure identified on the indicia means for said first container;

C. at least one processing means stationed along said processing path to define said preselected first pattern, the transport means and processing means having cooperating structure enabling the transport means to stop said first container in said path and at the processing means in said preselected first pattern and to subject the container to the effects of said processing means, the cooperating structure including means to permit the said container to be removed from said transport means and to be translated into operative association with at least said one processing means in said first pattern and returned to said transport means; and

D. control and programming means connected with said apparatus and effective to operate the transport means along said path operable to take a second container and to locate the same in at least a second processing means in said path defining a part of a second preselected pattern according to the processing procedure identified on the indicia means on said second container, the movement of said second container to said second processing means occurring during the period when said one container in said first pattern is at said one processing means being thus effective to utilize the time during said one container is at said one processing means for commencing, completing or

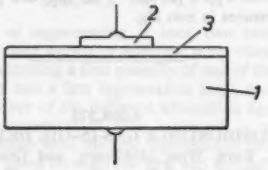
continuing the processing of said second container according to the time available therefor, said control and programming means including a memory having the processing procedure data stored therein and acting to monitor the procedures being performed upon consecutively processed containers and the sample adapted to be contained therein in a manner which permits the transport means to move a plurality of containers through at least partially a plurality of preselected patterns during the same period of time and on a time sharing basis between said plurality of preselected patterns and which thus utilizes the minimum processing time possible for each said sample without regard to the processing time of other said samples.

4,058,368

HYDROGEN DETECTOR

Christer Martinus Svensson, Goteborg; Leif Sigurd Lundkvist, Angered; Kurt Ingemar Lundstrom, and Madurai Somanathan Shivaraman, both of Goteborg, all of Sweden, assignors to Semiconductor Sensors, Inc., Cupertino, Calif.

Filed Sept. 9, 1975, Ser. No. 611,404
Claims priority, application Sweden, Sept. 9, 1974, 7411342
Int. Cl.[2] G01N *27/12, 31/06*
U.S. Cl. 23—254 E **6 Claims**



1. An improved device for detection of hydrogen in the form of hydrogen gas, atomic hydrogen or certain gaseous hydrogen compounds, including ammonia, the improvement comprising a semiconductor, a metal electrode and an insulating layer positioned intermediate said semiconductor and said electrode, said metal electrode made from palladium, nickel, platinum or an alloy containing at least 20% palladium by atomic weight.

4,058,369

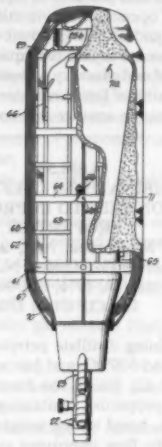
OXYGENATOR

Donald J. Bentley, Newport Beach, and Donald A. Raible, Orange, both of Calif., assignors to Bentley Laboratories, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 436,913, Jan. 28, 1974, abandoned. This application Apr. 4, 1975, Ser. No. 565,043
Int. Cl.[2] A61M *1/03*
U.S. Cl. 23—258.5 B **7 Claims**

1. A blood oxygenating device having a bubbler assembly for forming films of blood in bubble form by directing oxygen into a stream of venous blood and causing the transfer of oxygen to the films of blood and the release of carbon dioxide from the films of blood, said bubbler assembly including a defoaming means for defoaming bubbled blood wrapped around said bubbler assembly such that all blood and gases flowing out of said bubbler assembly pass through said defoaming means wherein the improvement comprises:

a lattice positioned between said defoaming means and said bubbler assembly for supporting said defoaming means a predetermined distance from and out of contact with the outisde wall of said bubbling assembly and affording a passageway for blood bubbles between the outside wall of said bubbler assembly and said defoaming means, said lattice comprising a plurality of spaced-apart ribs disposed along the length of said assembly



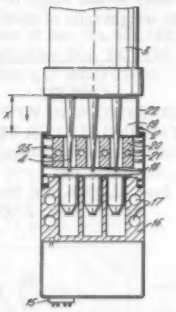
and a plurality of spaced-apart bands disposed around and connected to said ribs.

4,058,370

APPARATUS FOR ACCURATE PIPETTING OF SMALL LIQUID VOLUMES

Osmo Antero Suovaniemi, Armas Lindgreniatie 15 A, 00570 Helsinki 57, Finland

Filed Jan. 27, 1975, Ser. No. 544,132
Claims priority, application Finland, July 5, 1974, 742083
Int. Cl.[2] B01L *3/02, 9/00, 11/00*; C01N *31/00*
U.S. Cl. 23—259 **6 Claims**



1. Apparatus for pipetting liquid volumes including a frame having wall means which form an enclosure, a plurality of removable block members located in said enclosure, each said block member having means therein to hold a plurality of liquid containing means, a plurality of liquid containing means located respectively in at least some of said holding means, a plurality of cover means covering said plurality of removable block members, means for thermoregulating said enclosure to maintain the same and said block members contained therein at substantially the same temperature, a pipette having a plurality of liquid containers, a plurality of opening means in each said cover means, said plurality of opening means receiving said plurality of liquid containers of said pipette and locating said plurality of liquid containers in said enclosure above one of the plurality of liquid containing means, means movably mounting each of said cover means whereby said cover means may be

moved toward and away from said removable block members, movement of one of said cover means toward a removable block member with said plurality of liquid containers received in said plurality of opening means in said cover means causing said plurality of liquid containers to move into the plurality of liquid containing means to remove liquid which may be transferred to another of said plurality of liquid containing means by inserting said plurality of liquid containers through said plurality of opening means in another said cover means.

4,058,371

POLYMER COMBINATIONS USEFUL IN DISTILLATE HYDROCARBON OILS TO IMPROVE COLD FLOW PROPERTIES

Stephan Ilnyckyj, Maplewood, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed May 25, 1976, Ser. No. 689,740
Int. Cl.[2] C10L *1/18*
U.S. Cl. 44—62 **6 Claims**

1. A wax-containing distillate petroleum fuel oil boiling in the range of 120° to 500° C. and having a final boiling point above about 370° C., which has been improved in its low temperature flow properties, containing in the range of about 0.001 to 0.5 wt. %, based on the weight of the total composition, of a synergistic flow improving combination of:

a. aliphatic copolymer functioning as a nucleator for wax crystallization in said distillate, wherein said nucleator is a copolymer of ethylene and a vinyl ester of a C_1 to C_8 saturated aliphatic monocarboxylic acid, said copolymer having a (Mn) of from about 500 to 50,000 and in the range of 3 to 40 molar proportions of ethylene per molar proportion of said vinyl ester, and

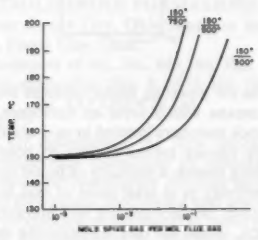
b. an aromatic oil soluble copolymer comprising principally C_8 and C_{20} monovinyl aromatic monomer and ester of an ethylenically unsaturated acid selected from the group consisting of maleic anhydride, acrylic acid and methacrylic acid, esterified with a saturated, essentially straight chain alcohol having in the range of 6 to 22 carbon atoms, said aromatic copolymer having a number average molecular weight (Mn) in the range of about 500 to about 50,000, and the weight ratio of (a) to (b) is in the range of 1/20 to 5/1.

4,058,372

FLUE GAS CONDITIONING WITH SPIKING GAS CONTAINING SULFUR TRIOXIDE

George B. DeLaMater, Media, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 22, 1976, Ser. No. 698,690
Int. Cl.[2] B03C *1/00*
U.S. Cl. 55—5 **5 Claims**



1. In a process for removing fly ash from flue gas at a temperature of from about 140° C to about 160° C by

a. treating the flue gas with a spiking gas containing sulfur trioxide in a sufficient amount for conditioning the flue gas in a mixing zone, and then

b. precipitating the fly ash from the flue gas by electrostatic means, the improvement which comprises:

1. forming a spiking gas containing from about 0.15 to 1.2 mol percent sulfur trioxide, and

2. maintaining the spiking gas at a temperature sufficiently high between a temperature of from about 300° to about 750° C such that on treating the flue gas with the spiking gas, the temperature of any mixture of spiking gas and flue gas from the point of introduction to the point of dilution as determined by the equation

$$T = \frac{NT^sC_p^s + T^fC_p^f}{NC_p^s + C_p^f}$$

wherein: T = Temperature of mixture of spiking gas and flue gas in degrees centigrade,
N = Mols of spiking gas per mol of flue gas
T^s = Temperature of the spiking gas in degrees Centigrade,
T^f = Temperature of the flue gas in degrees Centigrade,
C_p^s = Heat capacity of the spiking gas in Cal/mol/° C,
C_p^f = Heat capacity of the flue gas in Cal/mol/° C,
is not more than 10° C below the dew point temperature of the gas mixture as determined by the equation

$$1\,T_{DP} = 0.002276 - 0.00002943 \ln p_{H_2O} - 0.0000858 \ln p_{H_2SO_4} + 0.00000620(\ln p_{H_2SO_4})(\ln p_{H_2O})$$

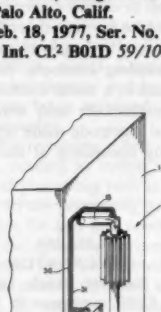
wherein: T_{DP} = Dew Point ° K and, pH_2O and $p_{H_2SO_4}$ are partial pressures in mm Hg.

4,058,373

COMBUSTIBLE GAS-IN-OIL DETECTOR

Robert A. Kurz, West Middlesex, and Donald K. Whirlow, Murrysville, both of Pa., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Feb. 18, 1977, Ser. No. 770,196
Int. Cl.[2] B01D *59/10*
U.S. Cl. 55—16 **15 Claims**



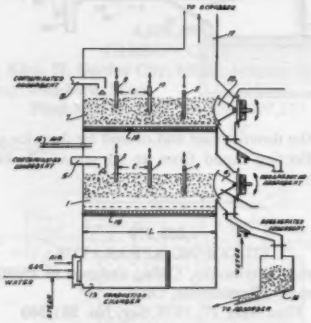
1. In a system for extracting and analyzing gas carried in a body of liquid, the combination of conduit means for directing a portion of the liquid in a path leading externally from the body and returning thereto, means for cooling the liquid in a portion of the conduit means which is external of the body for creating a temperature gradient along said path for causing the liquid to move through the conduit means by thermosiphonic action, means forming a hollow chamber within a portion of the conduit means with the chamber having semi-permeable outer wall means for passing gas from the liquid into the chamber, and means for moving gas from the chamber for subsequent analysis.

4,058,374

METHOD OF REGENERATING PARTICULATE ADSORPTION AGENTS

Harald Jüntgen, Essen-Heisingen; Jürgen Klein, Essen, and Günther Gappa, Gelsenkirchen-Buer, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Continuation-in-part of Ser. No. 657,406, Feb. 12, 1976, Pat. No. 4,017,422. This application June 10, 1976, Ser. No. 694,521
Claims priority, application Germany, June 14, 1975, 2526714
Int. Cl.² B01D *53/08, 53/12*
U.S. Cl. 55—60 5 Claims



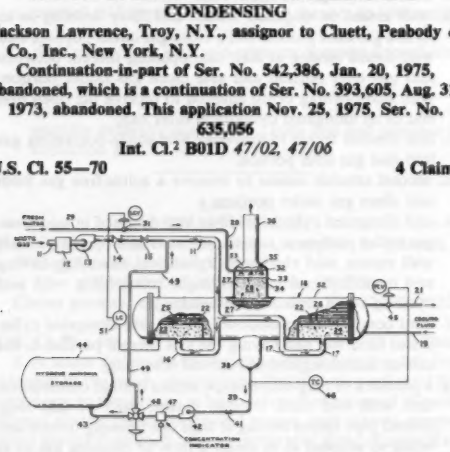
1. A method of regenerating at least two contaminated particulate adsorption agents of different properties, comprising the steps of admitting a first quantity of one of the different adsorption agents into a first regeneration zone, and a second quantity of the other of the different adsorption agents into a separate second regeneration zone arranged in a common regeneration chamber with the first regeneration zone; passing hot regenerating gases through the first and second quantities of the one and other adsorption agent present in the first and second separate regeneration zones, respectively, to fluidize and regenerate the different contaminated adsorption agents; removing the regenerated first and second quantities from the respective regeneration zones; and discharging the gases from the regeneration chamber upon passage thereof through the first and second quantities of the different adsorption agents.

4,058,375

AMMONIA RECOVERY BY SCRUBBING AND CONDENSING

Jackson Lawrence, Troy, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 542,386, Jan. 20, 1975, abandoned, which is a continuation of Ser. No. 393,605, Aug. 31, 1973, abandoned. This application Nov. 25, 1975, Ser. No. 635,056
Int. Cl.² B01D *47/02, 47/06*
U.S. Cl. 55—70 4 Claims



1. A method for removing ammonia from a waste gas mixture from a textile treatment chamber and containing ammonia, air and water vapor or steam, and having a first treatment zone containing a body of water and a second treatment zone in flow communication with said first treatment zone; characterized in comprising the steps of

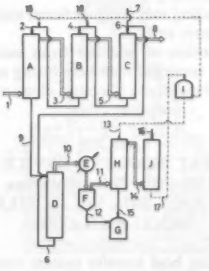
a. maintaining said first treatment zone and said body of water at a predetermined temperature;
b. bringing said waste gas mixture to a pressure of about 30 inches of water and bubbling said mixture upwardly through said first treatment zone and said body of water to dissolve a first quantity of ammonia from said mixture into said body of water;
c. flowing said waste gas mixture to said second treatment zone;
d. exposing said waste gas mixture to a countercurrent flow of water droplets in said second treatment zone to dissolve a second quantity of ammonia from said mixture, said water droplets with said second quantity of ammonia flowing to said body of water;
e. removing said waste gas mixture from said second treatment zone;
f. continuously removing a portion of said body of water containing said first and second dissolved quantities of ammonia as product;
g. measuring the percentage of ammonia content in said product; and
h. recycling said product back to said first and second treatment zones until said product from said measuring step reaches a predetermined ammonia content.

4,058,376

GAS ABSORBTION PROCESS

Waichiro Idzutsu, Yokohama; Masaaki Kuroki; Shigeru Komukai, both of Kawasaki; Daijiro Terasaki, Tokyo, and Sachie Nakajima, Kawasaki, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 651,152, Jan. 21, 1976, abandoned. This application Dec. 16, 1976, Ser. No. 751,092
Int. Cl.² B01D *19/00*
U.S. Cl. 55—70 6 Claims



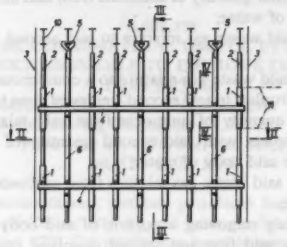
1. A gas purification process comprising contacting a gas to be purified containing hydrogen cyanide, ammonia and hydrogen sulfide with an aqueous ammonia absorbing solution to absorb hydrogen cyanide from the gas, said process being characterized in that (1) gaseous ammonia is present in the gas prior to the contact with the absorbing solution, (2) the amount of gaseous ammonia present in the gas is at least 1 mole per mole of the sum of hydrogen cyanide and hydrogen sulfide in the gas, (3) the gas is contacted with the absorbing solution in a counter-current manner, and (4) the ammonia concentration in the absorbing solution is not higher than 7 g/l.

4,058,377

DUST COLLECTING ELECTROSTATIC PRECIPITATOR

Heinz Schminke, Egelsbach; Kurt Rau, Frankfurt am Main, and Willi Bätza, Offenbach, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 3, 1976, Ser. No. 711,314
Claims priority, application Germany, Aug. 12, 1975, 2535830
Int. Cl.[2] B03C *3/04*
U.S. Cl. 55—148 2 Claims



1. A collecting-electrode assembly for an electrostatic precipitator comprising;

a support structure;

a multiplicity of mutually parallel transversely spaced vertical collecting electrodes each comprising a plurality of vertically extending sheet-metal strips loosely engaging at lateral edges an adjoining strip, the outermost strips of each collecting electrode having vertical outer edges at the sides of said assembly;

means for suspending each of said strips from said support structure;

at least one horizontal row of short sectional members each respectively engaging the outer edges of some of said collecting electrodes along one side of said assembly, said sectional members extending vertically and being of a length which is a minor fraction of the length of the outer edge engaged thereby;

a horizontally extending rigid bar fixed rigidly to all of said member of said row;

long sectional members embracing the outer edges of others of said collecting electrodes along said one side of said assembly, said long sectional members extending over a length substantially greater than the length of said short sectional members;

means for suspending said long sectional members from said support structure; and

means for suspension of said bar from said long sectional members, said sectional members fitting around the outer edges of the respective collecting electrodes.

4,058,378

HEAT TRANSFER DEVICE

Forest J. Saxton, 1256 Mitzi Drive, Calistoga, Calif. 94515

Filed Apr. 1, 1976, Ser. No. 672,542
Int. Cl.[2] B01D *47/00*
U.S. Cl. 55—257 R 7 Claims

1. A liquid cooling heat transfer system comprising:

a large, generally horizontal air duct positioned near ground level and open to ambient air at the upstream end thereof:

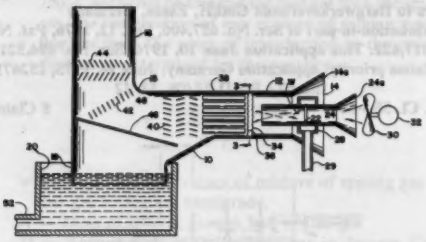
a venturi tube positioned in said air duct along the axis thereof near said upstream end:

annular nozzle means through said venturi tube conditioned to jet liquid downstream thereof in a converging conical path;

an annular duct sealed around said venturi tube in communication with said annular nozzle means;

a liquid conduit connecting a source of warm liquid to said annular duct;

a multiplicity of limited capacity separator ducts arranged across said air duct and extending along a portion of the length thereof downstream of said venturi tube to cause liquid particles moving downstream through said air duct to flow along separated paths; and



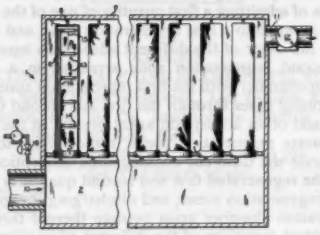
means at the downstream end of said air duct for separating and collecting liquid from an air stream flowing therethrough.

4,058,379

FILTERING APPARATUS

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 27, 1975, Ser. No. 581,340
Int. Cl.[2] B01D *46/04*
U.S. Cl. 55—302 7 Claims



1. A filter system for filtering a solids-containing gas stream, comprising

a. a filter housing,

b. wall means so disposed within said filter housing as to form a gas inlet portion and a clean gas outlet portion, said wall means having at least one opening therein between said gas inlet portion and said clean gas outlet portion, with said opening being adapted to receive the open first end of an elongated cylindrical filter bag;

c. first conduit means to introduce said solids-containing gas into said gas inlet portion;

d. second conduit means to remove a solids-free gas from said clean gas outlet portion;

e. said elongated cylindrical filter bag disposed in said clean gas outlet portion in association with said opening in said wall means, said elongated cylindrical filter bag having said open first end in a fluid-tight relationship with said opening and a closed second end;

f. third conduit means disposed within said elongated cylindrical filter bag and having the axis thereof parallel to the axis of said elongated cylindrical filter bag;

g. a plurality of ring-shaped pipe means in fluid communication with said third conduit means, each of said ring-shaped pipe means having at least one opening therein and being so adapted as to direct a flow of cleaning gas so as to sweep along the inner surface of said elongated cylindrical filter bag, and wherein the external ring diameter of said ring-shaped pipe means is essentially the same as the

internal diameter of said elongated cylindrical filter bag so that said ring-shaped pipe means, in addition to providing a means for directing said flow of cleaning gas along the inner surface of said elongated cylindrical filter bag, also supports said elongated cylindrical filter bag;

h. fourth conduit means in communication with said third conduit means and a source of said cleaning gas; and

i. valve means in said fourth conduit means to regulate flow of said cleaning gas from said source of said cleaning gas through said third and fourth conduits and each of said plurality of ring-shaped pipes.

4,058,380

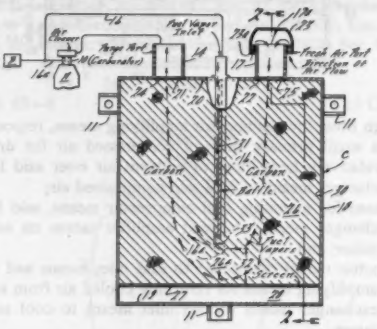
CARBON CELL

Lamar L. King, II, Garden City, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 2, 1973, Ser. No. 337,517

Int. Cl.² B01D *53/04*

U.S. Cl. 55—387 **1 Claim**



1. A hydrocarbon vapor adsorption-desorption device comprising:

a. a cell having an interior chamber with opposite end walls, one of said end walls having a plurality of ports with at least one port for receiving ambient air and another port for purging vapors,

b. a bed of vapor adsorbing material in said chamber interposed between said end walls,

c. at least one baffle extending from said one end wall toward said opposite end wall in a manner to substantially separate without completeness said bed into longitudinally divided portions with said ports on opposite sides thereof, and

d. at least one port for introducing fuel vapors to said bed immediately beneath said baffle whereby said vapors migrate generally equally into both said bed portions for collection and for subsequent purging.

4,058,381

STEAM DRYERS

Rene' Traiteur, Ris-Orangis, France, assignor to Babcock & Wilcox Limited, London, England

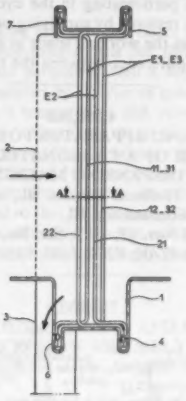
Filed Oct. 12, 1976, Ser. No. 731,200

Claims priority, application France, Jan. 20, 1976, 76.01325

Int. Cl.² B01D *45/00, 46/10*

U.S. Cl. 55—444 **2 Claims**

1. A steam drying device for removing water droplets from a stream of the steam comprising a frame having a frontal face transverse to the stream, at least two pair of recessed slipways formed therein transverse to said stream, said slipway recesses being spaced from each other, a perforated sheet of metal fixed to said frame to protect the steam drying device from foreign body damage, a first array of longitudinally disposed bars within said frame spaced transversey from each other and downstream from said perforated sheet of metal each of said bars having two ends, each of said ends being fixed to each other within a respective slipway recess, and a second array of longitudinally disposed bars within said frame spaced transversely from each other and from said first array bars and



downstream from said perforated sheet of metal, each of said second array bars having two ends, each of said ends being fixed to each other within a respective slipway recess to enable said bars to remove water droplets from the steam.

4,058,382

HOT-GAS RECIPROCATING MACHINE WITH SELF-CENTERED FREE PISTON

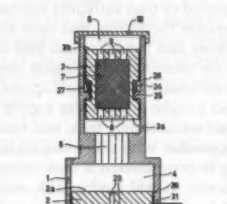
Jan Mulder, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1976, Ser. No. 744,521

Claims priority, application Netherlands, Dec. 5, 1975, 7514182

Int. Cl.² F25B *9/00*

U.S. Cl. 62—6 **5 Claims**



1. In a hot-gas reciprocating machine, comprising at least one working space in which a working medium completes a thermodynamic cycle, the working space comprising a compression space and an expansion space of mutually different mean temperature during operation, said spaces being interconnected via heat exchangers, including a regenerator; and at least one free piston which is reciprocatable in a cylinder, one face of the piston varying the volume of the working space, its other face forming part of the boundary of a buffer space in which working medium is also present under a pressure which is at least substantially constant during operation and which corresponds to the mean working medium pressure in the

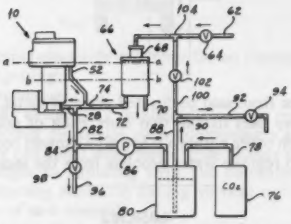
working space, the improvement comprising a control mechanism responsive to deviation of the mean piston position from a desired nominal central position, for instantaneously bringing the working space in communication with the buffer space at instants corresponding to such an instantaneous pressure of the working medium participating in the cycle that the nominal central position is restored by supplying or extracting working medium to or from the working space as a result of the instantaneous pressure difference between the two spaces.

4,058,383

METHOD OF AND APPARATUS FOR CLEANING THE ICEMAKER OF A CARBONATED BEVERAGE DISPENSING MACHINE

LeRoy Peterson, Hoffman Estates, Ill., assignor to Reynolds Products Inc., Schaumburg, Ill.

Filed Nov. 17, 1975, Ser. No. 632,216
Int. Cl.[2] F25B *47/00;* **F25C** *1/00;* **F25D** *3/12;* **B67D** *5/62*
U.S. Cl. 62—85 **7 Claims**



1. A method of cleaning the icemaker and icemaker water feeder tank of a carbonated beverage dispenser having a carbonated water supply, said feeder tank normally supplying said icemaker with still water to a first level, said icemaker having an ice storage chamber with a melt-down outlet at a second level above said first level, including the steps of supplying carbonated water to said feeder tank and to said icemaker, retaining said carbonated water in said feeder tank and in said icemaker for a period of time sufficient substantially to remove accumulated deposits therefrom, and then removing said carbonated water from said icemaker and said feeder tank.

5. Apparatus for cleaning the icemaker and icemaker water feeder tank of a carbonated beverage dispenser having a source of still water and a carbonated water supply system provided with a carbonated water supply tank, said feeder tank normally supplying said icemaker with still water up to a predetermined level, including in combination a first valve connecting said source of still water to said feeder tank, means for supplying said icemaker and said feeder tank with carbonated water from said supply system up to at least said predetermined level, said supplying means comprising a second valve connecting said carbonated water supply system to said icemaker and feeder tank, a drain line, normally inoperative means connecting said drain line to said icemaker and feeder tank, and control means for sequentially closing said first valve to disconnect said feeder tank from said source of still water, opening said second valve to connect said carbonated water supply system to said icemaker and feeder tank, and then rendering said drain line connecting means operative to drain said icemaker and feeder tank after a predetermined time delay sufficient to remove accumulated slime and mineral deposits.

4,058,384

PORTABLE REFRIGERATOR

Harry J. Keefe, 42 Clapboard Ridge, Danbury, Conn. 06810

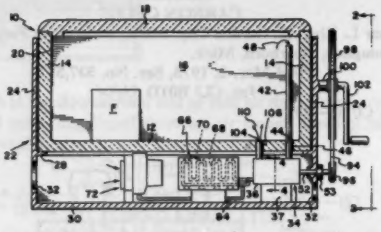
Filed Mar. 15, 1976, Ser. No. 666,756
Int. Cl.[2] F25D *3/08, 9/00*
U.S. Cl. 62—457 **10 Claims**

1. Apparatus for cooling air following removal of the air from a portable food storage container or the like and prior to recirculation of the air through said container comprising:

air outlet means for communicating air at a predetermined temperature from said container and air inlet means for communicating cooled air at a lesser temperature to said container;

compressor means connected to said air outlet means for receiving air from said container and compressing the removed air to heat the removed air;

heat exchanger means receiving a flow of compressed air from said compressor means and reducing the temperature of said compressed air;



high flow, low suction, air amplifying means, responsive to a small primary flow of compressed air for driving a relatively large flow of ambient air over said heat exchanger means to cool said compressed air;

means for mounting said compressor means, said heat exchanger means, and said amplifier means on said container; and

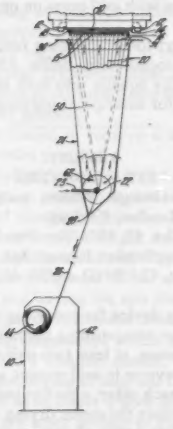
conduit means connected to said inlet means and said air amplifying means for returning cooled air from said heat exchanger means to said inlet means to cool said container.

4,058,385

METHOD FOR TRANSPORTING GLASS FIBERS

Dale Kleist, St. Louisville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 477,722, June 10, 1974, abandoned, which is a continuation of Ser. No. 316,141, Dec. 18, 1972, abandoned. This application Oct. 1, 1975, Ser. No. 618,588
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—2 **9 Claims**



1. A method for reduction of tension in continuous filaments formed from heat-softened filament forming material wherein

the tension in the filaments is due to movement of such filaments at a high linear speed through air comprising:

mechanically attenuating streams of the heat-softened filament forming material into fine filaments;

linearly advancing the filaments through a passageway at a known rate of speed; and,

moving air in the passageway in the same direction and at substantially the same speed as the advancing filaments to reduce tension in the advancing filaments from the effects of air drag, the air and filaments being moved at substantially the same speed through a major portion of the passageway.

4,058,386

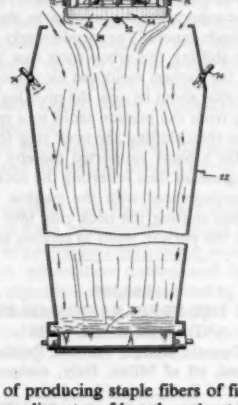
METHOD AND APPARATUS FOR ELIMINATING EXTERNAL HOT GAS ATTENUATION IN THE ROTARY FIBERIZATION OF GLASS

Duane Harold Faulkner, Cambridge City, Ind.; Harvell Morton Smith, Denver, Colo., and Larry Edward Howard, Richmond, Ind., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 544,097, Jan. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 317,557, Dec. 22, 1972, abandoned. This application Sept. 20, 1976, Ser. No. 725,072

Int. Cl.² C03B *37/04*

U.S. Cl. 65—6 **10 Claims**



1. A method of producing staple fibers of finite length and having an average diameter of less than about 7 microns from molten mineral material comprising:

a. introducing said molten material at a rate of hundreds of pounds per hour into a rotating rotor internal of a peripheral wall of the rotor, said peripheral wall containing orifices each having an initial diameter no greater than about 18 mils,

b. passing said molten material through said orifices to form primary fibers having an average diameter of less than about 7 microns without using hot gas blast attenuation,

c. forming around but spaced from said peripheral wall a series of streams of moving gas separated by a series of relatively quiescent zones,

d. moving said gas in said streams in a direction transverse to the direction of movement of said primary fibers, and

e. passing said primary fibers into said quiescent zones and into contact with said streams of moving gas, said gaseous streams having a temperature and velocity sufficient to break said primary fibers into staple fibers, but insufficient to cause any significant attenuation of said fibers.

6. In an apparatus for producing primary fibers having an average diameter of less than about 7 microns from a molten mineral material at a rate of hundreds of pounds per hour wherein the molten mineral material is introduced into a rotating rotor internal of a peripheral wall of the rotor and wherein said peripheral wall contains orifices each having an initial diameter no greater than 18 mils and wherein said molten material is passed through said orifices to form said primary fibers without using hot gas blast attenuation, the improvement comprising:

a. means for breaking said primary fibers into staple fibers,

b. said means comprising means for forming around but spaced from said peripheral wall a series of streams of moving gas separated by a series of quiescent zones, said streams having a temperature and velocity sufficient to break said primary fibers into staple fiber but insufficient to significantly attenuate said primary fibers, and

c. said means directing said streams of moving gas in a direction transverse to the direction in which said primary fibers are formed so that said primary fibers enter into said quiescent zones and into contact with said streams of moving gas to be broken into staple fibers.

4,058,387

SIMULTANEOUSLY BAKING AND SEALING A FACEPLATE ASSEMBLY

Neil B. Nofziger, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 592,968, July 3, 1975, Pat. No. 4,006,028. This application Sept. 15, 1976, Ser. No. 723,373

Int. Cl.² C03C *27/00*

U.S. Cl. 65—32 **2 Claims**

1. The method of sealing a faceplate to a funnel portion of a color television picture tube with a PbO-containing sealing glass in the presence of organic vapors capable of reducing the PbO in said sealing glass, comprising the steps of:

a. applying between the mating sealing edges of said faceplate portion having phosphors and organic compounds which give off organic vapors when heated associated with said phosphors applied on an inner surface thereof and said funnel portion a sealing amount of a sealing glass composition comprising,

i. at least about 70 weight percent of a PbO containing glass frit component having a sealing temperature of about 350° C. to about 415° C.,

ii. at least about 10–25 weight percent of at least one coarse particulate refractory filler component having a coefficient of thermal expansion of less than about 65×10^{-7} in./in./° C. (0°–300° C.) and a particle size distribution of about:

% of Particles	Microns
90	40–60
75	30–45
50	15–35
25	7–20
10	2–10
5	0.5–3

iii. at least one additive in an amount sufficient to prevent the PbO in said glass frit from being chemically reduced upon exposure of said glass frit to reducing conditions at the sealing temperature thereof, said additive being selected from a group consisting of:

1. a hydroxide or a higher oxide of a cation, wherein the hydroxide and oxide are thermally stable at the sealing temperature of the frits, and further wherein the hydroxide and the oxide are capable of being chemically reduced when exposed to the reducing conditions;

2. an inorganic nitrate having a thermal decomposition temperature of about 30°–600° C., a melting point temperature of about 36°–264° C. and containing water of hydration;

3. an inorganic nitrate having a melting point temperature lower than the firing temperature of the PbO-

containing glass frit and a thermal decomposition temperature higher than the firing temperature of the PbO-containing glass frit;

4. an inorganic nitrate having a melting point of about 414°–592° C.;
5. an inorganic nitrate which is thermally decomposable between about 150° C. and the fiber softening point temperature of the glass frit to yield HNO_3;
6. an inorganic carbonate which is thermally decomposable to yield carbon dioxide above the firing temperature of the glass frit;
7. an inorganic, oxygen-containing chlorine compound having a thermal decomposition temperature above the firing temperature of the glass frit; and
8. an inorganic dichromate having a decomposition temperature of not more than about 100° C. below to not more than about 100° C. above the firing temperature of the glass frit; and

iv. at least about 0.25–10 weight percent of at least one fine particulate refractory filler component having a coefficient of thermal expansion of less than about 65×10^{-7} in./in./° C. (0°–300° C.) and a particle size distribution of about:

% of Particles	Microns
90	5–10
75	3–8
50	2–4
25	0.8–2.5
10	0.5–2.0
5	0.2–1.5

b. subjecting the faceplate portion and funnel portion and sealing glass composition to a temperature sufficient to fuse the sealing glass composition onto the faceplate portion and funnel portion, while simultaneously baking the faceplate and funnel, including the phosphors and organic compounds thereby resulting in the liberation of said organic vapors, and

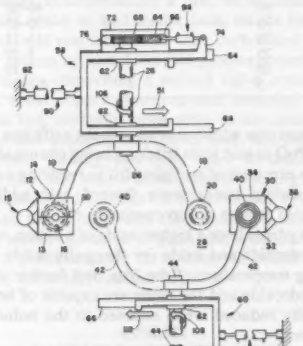
c. cooling the resulting assembly comprising the faceplate, funnel and sealing glass.

4,058,388

APPARATUS FOR FORMING GLASSWARE WITH SHIFTING INVERT AND REVERT MECHANISM

Anthony T. Zappia, Carmel, Ind., assignor to Ball Packaging Products, Inc., Muncie, Ind.

Filed Aug. 30, 1976, Ser. No. 718,404
Int. Cl.[2] C03B *9/00, 23/00*
U.S. Cl. 65—229 **10 Claims**



1. Glassware forming apparatus comprising a parison mold, a blow mold, a pair of neck rings for supporting glassware blanks, first and second invert arms for supporting the neck rings for movement in a common vertical plane, said molds opening in said common vertical plane, first and second arbors for supporting the first and second invert arms, respectively, the first and second arbors having axes which extend generally parallel to one another and perpendicularly to the common plane, the first and second invert arms being offset to prevent interference between them as they move the neck rings in the common vertical plane, means for shifting the arbors such that their axes move toward and away from one another during an operating cycle, and means for pivoting the arbors about their axes, said shifting means and pivoting means cooperating to invert the first neck ring with a newly formed blank suspended therein, to hold the blank at a station outside the blow mold while the second neck ring is in position over the blow mold, then to revert the second neck ring to a position adjacent the parison mold, then to shift the blank supported in the first neck ring into the blow mold, to shift the second neck ring into position to receive the next blank formed in the parison mold, to invert the second neck ring to hold the last-mentioned blank at the station outside the blow mold, to revert the first neck ring to the position adjacent the parison mold, to shift the second neck ring to convey the last-mentioned blank into the blow mold, and to shift the first neck ring into position to receive the next blank to be formed in the parison mold.

10. Glassware forming apparatus comprising a parison mold, a blow mold, a neck ring for supporting glassware blanks, an invert arm for supporting the neck ring for movement in a vertical plane extending between the parison mold and blow mold, an arbor for supporting the invert arm, the arbor having an axis which extends generally perpendicularly to the vertical plane, means for shifting the arbor such that its axis moves linearly between the parison mold and blow mold, and means for pivoting the arbor about its axis, the pivoting means inverting the neck ring from the parison mold to a reheat position, the shifting means then shifting the neck ring from the reheat position to transfer a blank supported thereby into the blow mold, the pivoting means then reverting the neck ring to a rest position out of engagement with the parison mold and the shifting means then shifting the neck ring into its position in engagement with the parison mold to receive another blank.

4,058,389

PROCESS FOR THE PREPARATION OF FERTILIZERS AND SOIL MODIFIERS

Luigi Piccolo; Marcello Ghirga; Antonio Paolinelli, and Gian Pietro Paganessi, all of Milan, Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Continuation of Ser. No. 642,820, Dec. 22, 1975, abandoned.
This application Apr. 7, 1977, Ser. No. 785,706
Claims priority, application Italy, Dec. 20, 1974, 30825/74
Int. Cl.[2] C05D *9/00*; C01C *1/244*; C01G *49/02*
U.S. Cl. 71—31 **12 Claims**

1. A method for the preparation of a composition useful as soil modifier and of a concentrated solution of ammonium sulphate with a high purity degree, starting from by-products obtained in the production of titanium dioxide from ilmenites or ilmenite slag by the sulphate process, said by-products consisting essentially of ferrous sulphate heptahydrate, which comprises:

a. contacting solid particles of said-by products with gaseous ammonia, thereby to obtain a reaction product consisting essentially of ammonium sulphate and ferrous hydroxide;

b. subjecting said reaction product to oxidation by oxygen or a gas containing molecular oxygen, thereby to convert said ferrous hydroxide into ferric hydroxide;

c. lixiviating with water the product obtained in stage (b), thereby to remove from 85 to 95 wt. % of said ammonium sulphate in the form of an aqueous solution having an ammonium sulphate content of at least 40 wt. %, and separating said solution from the residual solid; and

d. drying said residual solid to a water content of less than 20% by weight, said steps (a) and (b) being carried out at a temperature not higher than 90° C.

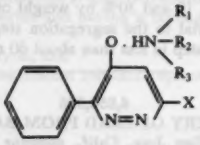
4,058,390

AMINE SALTS OF PHENYL-4-HYDROXYPYRIDAZINES AND THE PREPARATION AND HERBICIDAL COMPOSITIONS THEREOF

Rupert Schönbeck, Leonding; Engelbert Kloimstein, Eferding, and Erwin Wittmann, Linz, all of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Dec. 16, 1975, Ser. No. 641,588
Claims priority, application Austria, Dec. 17, 1974, 10073/74
Int. Cl.² A01N *9/24*; C07D *237/14*
U.S. Cl. 71—92 16 Claims

1. An amine salt of a 3-phenyl-6-halo-4-hydroxy-pyridazine of the formula



wherein X is selected from the group consisting of chlorine and bromine,

R_1 is selected from the group consisting of alkyl containing up to 14 carbon atoms, alkenyl containing up to 6 carbon atoms, cycloalkyl containing 5 to 7 carbon atoms, and alkyl contaning up to 14 carbon atoms which is monosubstituted by hydroxy, alkoxy containing up to 10 carbon atoms, cyano, amino, lower monoalkylamino or lower dialkylamino, and

R_2 and R_3 are each selected from the group consisting of hydrogen and the groups defined above with respect to R_1,

or R_1 and R_2 together with the nitrogen atom to which they are attached form heterocyclic selected from the group consisting of pyrrolidino pyrrolidino monosubstituted by lower alkyl, pyrrolidino disubstituted by lower alkyl, piperidino, piperidino monosubstituted by lower alkyl and piperidino disubstituted by lower alkyl.

15. A herbicidal composition which comprises at least one amine salt according to claim 1 in admixture with a liquid or solid diluent.

4,058,391

1,2-DIALKYL-3,4,5-TRISUBSTITUTED PYRAZOLIUM SALTS AS HERBICIDAL AGENTS

Barrington Cross, Rocky Hill, and Bryant Leonidas Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 584,686, June 6, 1975, Pat. No. 3,963,742, which is a continuation-in-part of Ser. No. 487,826, July 12, 1974, abandoned. This application Feb. 11, 1976, Ser. No. 657,114
Int. Cl.² A01N *9/22*
U.S. Cl. 71—92 9 Claims

1. A method for the control of undesirable broad leaf weeds and grass weeds comprising: contacting said weeds with a herbicidally effective amount of a compound selected from the group consisting of: 1,2-dimethyl-3,5-diphenyl-4-methoxypyrazolium perchlorate, 1,2-dimethyl-3,5-diphenyl-4methoxypyrazoliummethyl sulfate, 1,2-dimethyl-3,5-diphenyl-4-n-propoxypyrazolium chloride, 1,2-dimethyl-3,5-diphenyl-4-i-propoxypyrazolium methyl sulfate, 4-n-butoxy-1,2-dimethyl-3,5-diphenylpyrazolium perchlorate and 1,2-dimethyl-3,5-diphenyl-4-n-pentyloxypyrazolium perchlorate.

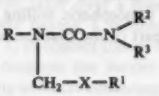
4,058,392

TETRASUBSTITUTED UREA COMPOUNDS AND HERBICIDAL COMPOSITIONS

Rudolf Thomas; Wolfgang Krämer, both of Wuppertal; Ludwig Eue, Cologne; Carl Metzger, and Gerhard Jäger, both of Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 10, 1973, Ser. No. 395,794
Claims priority, application Germany, Sept. 27, 1972, 2247310
Int. Cl.² C07C *127/15, 127/17, 127/19*
U.S. Cl. 71—106 19 Claims

1. N,N′-tetrasubstituted urea compound of the formula



wherein

X is oxygen

R is alkyl of from 1 to 4 carbon atoms, phenyl, benzyl or substituted phenyl or benzyl wherein the substitutent is at least one of halogen, alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, haloalkoxy of from 1 to 5 halo atoms, phenoxy, halophenoxy and nitrophenoxy;

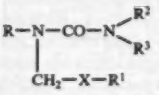
R^1 is —C(Y)-R^4 wherein Y is oxygen and R^4 is alkyl, alkenyl, alkynyl, alkoxyalkyl, haloalkyl, haloalkynyl, cycloalkyl or cycloalkenyl of from 3 to 8 ring carbons and wherein R^4 contains not more than 11 carbon atoms; or is hydrogen or alkyl substituted by alkoxy and alkoxycarbonyl,

R^2 is alkyl, substituted alkyl, alkenyl, substituted alkynyl, wherein the substituents are at least one of alkoxy of from one to three carbon atoms, haloalkyl of from one to two carbon atoms and one to three halogen atoms, and halogen, alkoxy or cycloalkyl of from 3 to 8 ring carbon atoms;

R^3 is alkyl, haloalkyl or alkenyl of up to 4 carbon atoms;

R^2 and R^3 represent an alkylene bridge.

16. Method of combatting undesired vegetation, which method comprises applying to such vegetation or to its habitat, herbicidally effective amounts of an N,N′-tetrasubstituted urea compound of the formula



wherein

X is oxygen

R is alkyl of from 1 to 4 carbon atoms, phenyl, benzyl or substituted phenyl or benzyl wherein the substitutent is at least one of halogen, alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, haloalkoxy of from 1 to 5 halo atoms, phenoxy, halophenoxy and nitrophenoxy;

R^1 is —C(Y)-R^4 wherein Y is oxygen and R^4 is alkyl, alkenyl, alkynyl, alkoxyalkyl, haloalkyl, haloalkynyl, cycloalkyl or cycloalkenyl of from 3 to 8 ring carbons; or is hydrogen or alkyl substituted by alkoxy and alkoxycarbonyl,

R^2 is alkyl, substituted alkyl, alkenyl, substituted alkynyl, wherein the substituents are at least one of alkoxy of from one to three carbon atoms, haloalkyl of from one to two carbon atoms and one to three halogen atoms, and halogen, alkoxy or cycloalkyl of from 3 to 8 carbon atoms;

R^3 is alkyl, haloalkyl or alkenyl or up to 4 carbon atoms;

R^2 and R^3 represent an alkylene bridge.

4,058,393

PROCESS FOR THE BENEFICIATION OF TITANIFEROUS ORES

Robert Joseph William McLaughlin, Alphington, Australia, assignor to The University of Melbourne, Victoria, Australia

Filed June 23, 1975, Ser. No. 589,129
Claims priority, application Australia, June 21, 1974, 7920/74
Int. Cl.[2] C22B *3/00*
U.S. Cl. 75—1 T 19 Claims

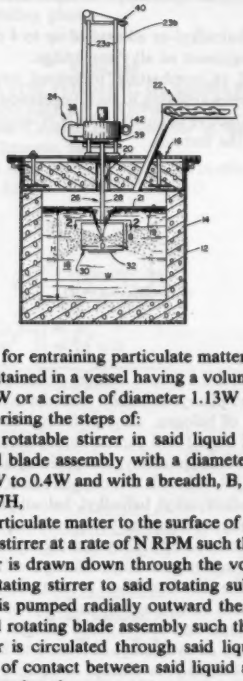
1. A process for the beneficiation of titaniferous ores including mixing the ore with an insoluble source of fluoride ions which source becomes soluble under the following conditions of the process, the fluoride concentration relative to the titania values in the ore lying between 13% and 50% by weight and heating the mixture with dilute hydrochloric acid at a temperature not more than atmospheric boiling point to thereby dissolve a substantial part of the titanium and iron values of the ore.

4,058,394

PYROMETALLURGICAL SYSTEM FOR SOLID-LIQUID CONTACTING

Peter B. Crimes, Sudbury, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Feb. 23, 1976, Ser. No. 660,021
Int. Cl.[2] C21C *7/00*
U.S. Cl. 75—61 14 Claims



1. A process for entraining particulate matter in a high density liquid maintained in a vessel having a volume defined by a square of side W or a circle of diameter 1.13W and by a liquid depth H, comprising the steps of:

providing a rotatable stirrer in said liquid having a fully submerged blade assembly with a diameter, D, which is about 0.1W to 0.4W and with a breadth, B, which is about 0.1H to 0.7H,

supplying particulate matter to the surface of said liquid, and

rotating said stirrer at a rate of N RPM such that the particulate matter is drawn down through the vortex produced by said rotating stirrer to said rotating submerged blade assembly, is pumped radially outward therefrom by said submerged rotating blade assembly such that the particulate matter is circulated through said liquid whereby a large area of contact between said liquid and particulate matter is produced.

4,058,395

EXTRACTING COPPER FROM SULPHIDE CONCENTRATES

Michael John Sole, 44 Mountain View Avenue, Aldara Park, Randburg, Transvaal, South Africa

Continuation of Ser. No. 507,100, Sept. 18, 1974, abandoned.
This application Sept. 3, 1976, Ser. No. 720,476
Claims priority, application South Africa, Sept. 28, 1973, 73/7645
Int. Cl.[2] C22B *15/00*
U.S. Cl. 75—72 4 Claims

1. In a process for the extraction of copper from copper containing sulphide concentrates comprising the steps of roasting the concentrate to reduce the sulphur content to below 1% by weight and then treating the roasted material to the segregation process by adding a halide salt and a reductant to the roasted mterial at an elevated temperature of about 700° to 800° C. so that the copper segregates in the material in metallic form, the improvement comprising the step of adding to the material between 10 and 30% by weight of silica before subjecting the material to the segregation step, and completing said segregation step in less than about 60 minutes.

4,058,396

RECOVERY OF LEAD FROM BATTERIES

James R. Birk, San Jose, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Nov. 26, 1976, Ser. No. 744,918
Int. Cl.[2] C22B *13/00*
U.S. Cl. 75—77 6 Claims

1. A method for isolating lead from lead storage batteries comprised of organic materials, said method comprising:

in a lead recovery zone, contacting lead batteries substantially free of acid with molten alkali metal carbonate salt at a temperature substantially in excess of 350° C for a time sufficient to degrade the organic materials to volatiles and char, wherein said char reduces lead compounds to lead and said lead is melted;

withdrawing the char and molten salt to a combustion zone;

burning the char in the presence of oxygen to raise the temperature of said molten salt to the desired temperature;

recycling said salt for contact with fresh battery in said lead recovery zone; and

withdrawing a portion of said molten salt from said combustion zone for removal of impurities and returning the purified salt to the combustion zone.

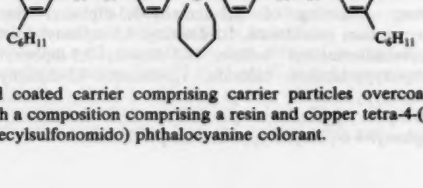
4,058,397

YELLOW DEVELOPER EMPLOYING A COATED CARRIER

Joseph Mammino, Penfield, and Franklin Jossel, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 29, 1975, Ser. No. 617,771
Int. Cl.[2] G03G *9/10, 13/01*
U.S. Cl. 96—15 D 14 Claims

1. An electrostatographic developer for developing electrostatic latent images comprising toner particles and coated carrier particles, said toner particles comprising a resin material and a colorant satisfying the formula:



said coated carrier comprising carrier particles overcoated with a composition comprising a resin and copper tetra-4-(octadecylsulfonomido) phthalocyanine colorant.

4,058,398

IMAGE RECORDING MATERIAL AND METHOD FOR FORMING AN IMAGE USING THE SAME

Chiaki Osada, Odawara; Elichi Hasegawa, and Masataka Murata, both of Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

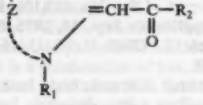
Filed Sept. 29, 1975, Ser. No. 617,603
Claims priority, application Japan, Sept. 27, 1974, 49-111171
Int. Cl.[2] G03C *5/08, 1/68*
U.S. Cl. 96—27 R 18 Claims

1. A process for forming an image which comprises imagewise exposing a recording material comprising a support, a light-sensitive composition layer on said support, and a transparent film on said light-sensitive composition layer, and then peeling off said transparent film to remove the exposed areas of said light-sensitive composition layer with said transparent film and to leave the unexposed areas of said light-sensitive composition layer on said support, thereby to form an image on said support, wherein said light-sensitive composition comprises:

a. a monomer containing at least two addition-polymerizable unsaturated bonds and having a boiling point of at least 100° C,

b. polyvinyl butyral, and

c. a photopolymerization initiator represented by the formula:



wherein R_1 is an alkyl group or vinylmethyl group, R_2 is an alkyl group, aryl group or thienyl group, and Z is a group of non-metallic atoms necessary to forming a heterocyclic ring, and said transparent film is peeled off at a temperature of about 70° to 150° C.

5. The process according to claim 1, wherein the photopolymerization initiator is selected from the group consisting of 2-benzoylmethylene-3-methyl-β-naphthothiazoline, 2-benzoylmethylene-3-ethyl-β-naphthothiazoline, 3-ethyl-2-(2-thenoyl)methylene-β-naphthothiazoline, 3-ethyl-2-propionylmethylene-β-naphthothiazoline, and 5-chloro-3-ethyl-2-p-methoxybenzoylmethylenebenzothiazoline.

4,058,399

PHOTOSENSITIVE DIAZOTYPE MATERIAL AND METHOD OF MAKING THE SAME

Sharon S. McNeil; Carl R. Bloomquist, and Robert C. Johnston, all of Binghamton, N.Y., assignors to Defiance - Azon Corporation, Johnson City, N.Y.

Continuation of Ser. No. 366,137, June 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 104,991, Jan. 8, 1971, abandoned. This application Jan. 26, 1976, Ser. No. 652,317
Int. Cl.[2] G03C *1/60, 1/52*
U.S. Cl. 96—75 2 Claims

1. A diazotype intermediate assembly which is easily erasable with a conventional soft rubber pencil eraser comprising a transparentized paper base coated with a barrier layer of a rubber-like polymeric material which barrier layer is overcoated with a sensitizing layer; in which said sensitizing layer is obtained by overcoating the barrier layer with an aqueous sensitizing solution consisting essentially of 2–6% by weight of a water soluble cellulose derivative; 0.5–4% by weight of a water soluble melamine-formaldehyde or urea-formaldehyde cross-linking resin; a light sensitive aromatic diazonium compound; an azo coupling agent; an organic acid having a pKa^{25} value of from 2.5 to 4.5; and 1–8% by weight of silica having a particle size of 1–10 microns in an amount sufficient to improve the erasability of said diazotype intermediate assembly compared to the assembly containing no silica; water and an amount of a lower alcohol equal to or less than the amount of water.

2. A process for preparing an erasable photosensitive diazotype assembly comprising steps of:

a. coating a transparentized base with an aqueous emulsion of a rubber-like polymer material and drying to form a barrier layer;

b. overcoating said barrier layer with a sensitizing layer by passing said barrier layer over a fountain of an aqueous sensitizing solution having a maximum viscosity of 75 centipoises at 20° C in contact therewith, such that the top of the fountain contacts the barrier layer surface; said aqueous sensitizing solution consisting essentially of 2–6% by weight of a water soluble cellulose derivative; 0.5–4% by weight of a water soluble melamine-formaldehyde or urea-formaldehyde cross-linking resin; a light sensitive aromatic diazonium compound; an azo coupling agent; an organic acid having a pKa^{25} value of from 2.5 to 4.5; and 1–8% by weight of silica having a particle size of 1–10 microns sufficient to improve the erasability of said diazotype intermediate assembly compared to the assembly containing no silica; water and an amount of a lower alcohol equal to or less than the amount of water.

4,058,400

CATIONICALLY POLYMERIZABLE COMPOSITIONS CONTAINING GROUP VIA ONIUM SALTS

James V. Crivello, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 466,373, May 2, 1974, abandoned. This application Dec. 9, 1975, Ser. No. 638,981
Int. Cl.[2] G03C *1/68, 5/00;* G08F *8/34*
U.S. Cl. 96—86 P 15 Claims

1. Cationically polymerizable compositions consisting essentially of

A. a monomeric or prepolymeric cationically polymerizable organic material free of oxirane oxygen selected from vinyl organic monomers, vinyl organic propolymers, cyclic organic ethers, cyclic organic esters, cyclic organic sulfides, cyclic amines and organosilicon cyclics, and

B. an effective amount of photodecomposable armoatic onium salt of a GRoup VIa element capable of effecting the cationic polymerization of (A) when exposed to radiant energy where said photodecomposable aromatic onium salt of a Group VIa element has the formula,

$$[(R)(R^1)_a(R^2)_c X]_d^+[MQ_e]^{-(e-f)}$$

where R is a monovalent aromatic orgnic radical, R^1 is a monovalent organic aliphatic radical selected from alkyl, cycloalkyl and substituted alkyl, R^2 is a polyvalent organic radical forming a heterocyclic or fused ring structure selected from aliphatic radicals and aromatic radicals, X is a Group VIa element selected from sulfur, selenium and tellurium, M is a metal or metalloid, Q is a halogen radical, a is a whole number equal to 0 to 3 inclusive, b is a whole number equal to 0 to 2 inclusive, c is a whole number equal to 0 or 1, where the sum of $a + b + c$ is a value equal to 3 or the valence of X,

$d = e - f$

f = valence of M and is an integer equal to from 2–7 inclusive

e is $> f$ and is an integer having a value up to 8.

4,058,401

PHOTOCURABLE COMPOSITIONS CONTAINING GROUP VIA AROMATIC ONIUM SALTS

James V. Crivello, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 466,374, May 2, 1974, abandoned. This application Dec. 9, 1975, Ser. No. 638,982
Int. Cl.[2] G03C 1/68; C08F 8/18
U.S. Cl. 96—115 R 15 Claims

1. Photocurable compositions consisting essentially of

A. an epoxy resin polymerizable to a higher molecular weight state,

B. from 0.1 to 15% by weight of a photodecomposable aromatic onium salt of a Group VIa element capable of effecting the cure of epoxy resin when exposed to radiant energy wherein said aromatic onium salt has the formula

$$[(R)_a(R^1)_b(R^2)_cX]_d + [MQ_e]^{-(e-f)}$$

where R is a monovalent aromatic organic radical, R^1 is a monovalent organic aliphatic radical selected from alkyl, cycloalkyl and substituted alkyl, R^2 is a polyvalent organic radical forming a heterocyclic or fused ring structure selected from aliphatic radicals and aromatic radicals, X is a Group VIa element selected from sulfur, selenium and tellurium, M is a metal or metalloid, Q is a halogen radical, a is a whole number equal to 0 to 3 inclusive, b is a whole number equal to 0 to 2 inclusive, c is a whole number equal to 0 or 1, where the sum of $a + b + c$ is a value equal to 3 or the valence of X,

$d = e - f$

f = valence of M and is an integer equal to from 2 to 7 inclusive

e is $>f$ and is an integer having a value up to 8 and

C. from 0 to 100 parts by weight of filler, per 100 parts of epoxy resin.

4,058,402

WATER SOLUBLE RODENT REPELLENT COMPOSITION FOR PROTECTING A BURIED MATERIAL SUCH AS A CABLE

Roy E. Stansbury, and James A. Shotton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 861,175, Sept. 25, 1969, Pat. No. 3,643,450. This application July 21, 1971, Ser. No. 164,934
Int. Cl.[2] C09D 5/14
U.S. Cl. 106—16 6 Claims

1. A composition suitable for application to an object subject to rodent damage by chewing by the rodent of the object to protect said object against such damage by keeping the rodent at a distance from said object when it is buried in the ground and which upon application to said object forms thereon a solid, moisture dispersible layer which comprises in a non-aqueous, liquid solvent, a solid, water-soluble, repellent holding dispersible carrier and an effective N,N-dialkylsulfenyl dithiocarbamate rodent repellent, the rodent repellent being present from about 1–45 weight percent of the composition, the remainder of the composition consisting of said carrier and a solvent, said carrier being present in preponderance in said remainder of the composition, said non-aqueous liquid solvent being selected from the group of dimethylformamide and dimethylsulfoxide and mixtures thereof and said solid, water-soluble carrier being a hydroxylalkyl cellulose, said composition being adapted upon being acted upon by moisture in the ground to release a rodent repellent protective barrier surrounding said object.

4,058,403

REFRACTORY COMPOSITIONS

Kyohei Funabiki, and Tetsuya Tokunaga, both of Fujieda, Japan, assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Dec. 11, 1975, Ser. No. 639,679
Claims priority, application Japan, Nov. 12, 1975, 50-141476
Int. Cl.[2] C04B 35/52; C08L 97/00
U.S. Cl. 106—56 11 Claims

1. In a solid refractory composition comprising an inorganic refractory material and a substantially carbonized organic resin as a carbonaceous binder therefor, the improvement wherein the resin comprises a condensate resin of a phenol and an aldehyde chemically modified by reaction under heating with an extending agent selected from the group consisting of sulfite pulp lignin, kraft pulp lignin, molasses and mixtures thereof, the amount of lignin employed being about 5 to about 300 parts by weight per hundred parts by weight of the phenol, the amount of molasses employed being about 5 to about 500 parts by weight per hundred parts by weight of the phenol, and the amount of refractory material employed being about 0.5 to about 1,000 parts by weight per 100 parts by weight of extending agent.

4,058,404

SINTERED CERAMIC DIELECTRIC BODY

Shinobu Fujiwara, and Hitoshi Tanaka, both of Shinmachi, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 423,101, Dec. 10, 1973, abandoned. This application Sept. 16, 1975, Ser. No. 613,739
Int. Cl.[2] C04B 35/00, 35/46
U.S. Cl. 106—73.31 5 Claims

1. A sintered ceramic dielectric body having a high dielectric constant, as well as a low dielectric loss and almost no variation in the dielectric constant and the dielectric loss with respect to a wide variation of an applied high AC or DC voltage, which consists essentially, by weight, of approximately 18 to 70% of strontium titanate ($SrTiO_3$), approximately 4 to 75% of barium titanate ($BaTiO_3$), 2.5 to 17.4% of bismuth oxide (Bi_2O_3) and 1.7 to approximately 20% of titanium oxide (TiO_2); the ratio by mole of the titanium oxide (TiO_2) to the bismuth oxide (Bi_2O_3) being within the range from approximately 1 to 18.

4,058,405

PUMPABLE CEMENT GROUT AND ADDITIVE

Joseph T. Snyder, Northfield, and Richard E. Huffman, Cleveland Heights, both of Ohio, assignors to Grout Supply Company, Richfield, Ohio

Filed July 9, 1976, Ser. No. 703,940
Int. Cl.[2] C04B 7/35
U.S. Cl. 106—87 8 Claims

1. A pumpable cement grout or mortar having improved early compressive strength consisting essentially of 100 parts by weight of cement, from about 100 to 300 parts of sand, from about one to five parts by weight of sodium chloride, from about 0.006 to 0.03 parts of aluminum powder, and water.

4,058,406

CEMENTITIOUS COMPOSITION

Dante A. Raponi, Box 9602, Panama City, Fla. 32401

Continuation-in-part of Ser. No. 660,618, Aug. 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 369,302, May 21, 1964, abandoned. This application Jan. 30, 1976, Ser. No. 653,755
Int. Cl.[2] C04B 7/35
U.S. Cl. 106—90 8 Claims

1. A synthetic resin-inorganic cementitious settable composition, said composition consisting essentially of, by volume:

a. about 1–4 parts polyethylene strips;

b. about 2–8 parts aggregate;

c. about 1–2 parts hydraulic cement; and

d. about 1–4 parts water.

4,058,407

HYDRAULIC CEMENT MIXES AND PROCESS FOR IMPROVING HYDRAULIC CEMENT MIXES

James A. Ray, Mantua, Ohio, assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Dec. 1, 1976, Ser. No. 746,255
Int. Cl.[2] C04B 7/352
U.S. Cl. 106—92 23 Claims

1. A hydraulic cement mix including hydraulic cement, aggregate, sufficient water to effect hydraulic setting of the cement, and an additive comprising pods, with or without the beans, of the carob tree, Ceratonia Siliqua, extracts of said pods, with or without beans, or combinations thereof, said additive being present in an amount of up to about 0.25% by weight based upon the weight of the cement to thereby increase the strength of the mix when hardened.

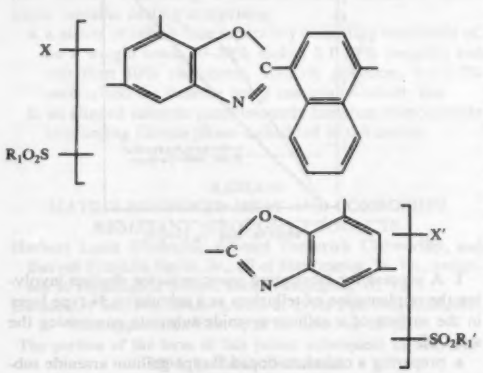
4,058,408

BIS-BENZOXAZOLYL-NAPHTHALENES AS OPTICAL BRIGHTENERS

Hans-Rudolf Meyer, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 548,043, Feb. 7, 1975, Pat. No. 3,993,659, which is a continuation-in-part of Ser. No. 502,681, Sept. 3, 1974, abandoned, which is a continuation of Ser. No. 276,992, Aug. 1, 1972, abandoned. This application Nov. 3, 1975, Ser. No. 627,997
Claims priority, application Switzerland, Aug. 10, 1971, 11799/71
Int. Cl.[2] C08K 5/35
U.S. Cl. 106—176 7 Claims

1. Optically brightened organic material consisting essentially of organic material selected from the group consisting of polyesters, polyvinyl chloride, polystyrene, polyacrylonitrile and cellulose acetates, having applied thereto or incorporated therein 0.001 to 2 percent by weight of a compound of the formula



wherein

R_1 and R_1' independently of one another denote alkyl with 1 to 6 carbon atoms which is optionally substituted by chlorine, phenyl which is optionally substituted by chlorine or alkyl with 1 to 4 carbon atoms, or phenyl alkyl with 1 to 3 carbon atoms in the alkyl part which is optionally substituted by chlorine or methyl in the phenyl part, and

X and X' independently of one another denote hydrogen, chlorine or alkyl with 1 to 4 carbon atoms.

4,058,409

ANTI-TRANSPIRANT COMPOSITION

George Kesslin, Teaneck, N.J., assignor to Kay-Fries Chemicals, Inc., Stony Point, N.Y.

Continuation of Ser. No. 436,166, Jan. 24, 1974, abandoned. This application Aug. 29, 1975, Ser. No. 608,870
Int. Cl.[2] C09G 1/10
U.S. Cl. 106—271 11 Claims

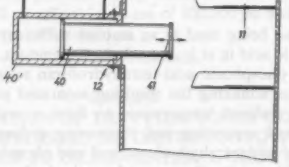
1. A film-forming anti-transpirant coating composition for growing plant foilage in the form of an aqueous emulsion concentrate consisting essentially of the intermixture of oxidized emulsifiable polyethylene having molecular weights in the range of from about 1000 to about 3400 with at least 25% polyterpene having molecular weights in the range of from about 600 to about 1800 and an acid number of about zero.

4,058,410

COUNTER-CURRENT LEACHING TOWER

Walter Dietzel, and Siegfried Matusch, both of Braunschweig, Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Feb. 25, 1977, Ser. No. 772,259
Claims priority, application Germany, Mar. 9, 1976, 2609673
Int. Cl.[2] C13D 1/12
U.S. Cl. 127—5 7 Claims



1. An extraction tower for conveying material through a leaching path in counter-current fashion relative to a leaching liquid flow, comprising a tower housing, a plurality of material conveying means including rotatable screw means and baffle means operatively arranged inside said tower for conveying said material through the tower housing, sensor means operatively secured to any of said material conveying means to sense loads to which the respective conveying means are subjected in operation inside said tower, control means responsive to said sensor means, drive means individually connected to said material conveying means, means connecting at least certain of said drive means to said control means for regulating said drive means in response to load signals received from said sensor means, and length varying means as part of said conveying means, said drive means including means operatively connected to said length varying means for varying the effective length of at least certain of said conveying means.

4,058,411

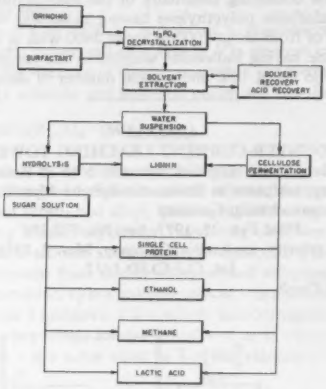
DECRYSTALLIZATION OF CELLULOSE

Winthrop D. Bellamy, and Fred F. Holub, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1976, Ser. No. 718,756
Int. Cl.[2] C13K 1/02; C08B 15/00
U.S. Cl. 127—37 3 Claims

1. A process for decrystallizing cellulose in natural cellulosic material which comprises grinding said natural cellulosic material to a size of about 1 millimeter or less in diameter and length, admixing at ambient temperature phosphoric acid with the ground natural cellulosic material to form a gel-like mixture, said phosphoric acid ranging in concentration from 80

weight % to 85 weight % and being used in an amount sufficient to form said gel-like mixture, said phosphoric acid ranging in amount from 3 to 10 parts for one part of said cellulosic material transforming the crystalline regions of said cellulose to amorphous form, admixing at ambient temperature an aqueous solution of tetrahydrofuran with said gel-like mixture to extract said phosphoric acid therefrom forming a solution therewith and a precipitate of amorphous cellulose, said aqueous solution of tetrahydrofuran being comprised of 1 part of water for about 30 to 100 parts of tetrahydrofuran, said tetrahydrofuran being used in an amount sufficient to extract the phosphoric acid in at least a substantial amount, separating the resulting phosphoric acid-tetrahydrofuran solution from said precipitate, admixing the resulting separated precipitate with water at ambient temperature to form a water suspension thereof, and separating and recovering at least a substantial amount of said tetrahydrofuran and said phosphoric acid from the resulting phosphoric acid-tetrahydrofuran solution by distilling said tetrahydrofuran from said phosphoric acid-tetrahydrofuran solution.

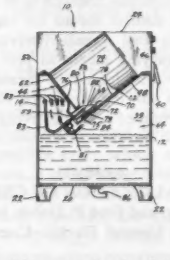


4,058,412

APPARATUS FOR OPENING AND WASHING CANS

Merton C. Knapp, and Charles Rex Galloway, both of Mount Ayr, Iowa, assignors to Green Hills, Inc., Mount Ayr, Iowa

Filed Jan. 8, 1976, Ser. No. 647,452
Int. Cl.[2] B08B *9/04*
U.S. Cl. 134—24 **13 Claims**



1. A device for washing a can having lateral sides, a top, and a bottom, said device comprising;

a support having a first end and a second end for supporting said can on one of said lateral sides for sliding movement from a pre-punch position to a punch position;

a knife positioned adjacent said support and having a cutting edge presented towards said bottom of said can when said can is in said pre-punch position whereby said knife will destructively pierce said bottom of said can whenever said can is manually forced against said knife for movement to said punch position;

said knife being shaped to provide a channel for liquid contents to drain from said can whenever said can is pierced by said knife,

a spray nozzle positioned within the channel of the knife so as to protrude within the interior of said can;

means connecting said spray nozzle to a source of fluid under pressure whereby said spray nozzle will spray said fluid into the interior of said can, and

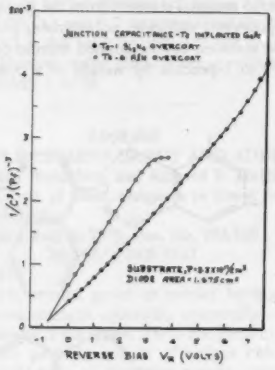
said support being inclined, said first end thereof being lower than said second end, said knife being positioned adjacent said first end of said support whereby the fluid contents of said can will flow towards said knife and outwardly through the hole in said can caused by said knife.

4,058,413

ION IMPLANTATION METHOD FOR THE FABRICATION OF GALLIUM ARSENIDE SEMICONDUCTOR DEVICES UTILIZING AN ALUMINUM NITRIDE PROTECTIVE CAPPING LAYER

Bryant M. Welch, Thousand Oaks, and Richard D. Pashley, San Jose, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 13, 1976, Ser. No. 685,841
Int. Cl.[2] H01L *21/265, 21/324*
U.S. Cl. 148—1.5 **1 Claim**



1. A process for fabricating semiconductor devices involving the implantation of tellurium as a submicron N-type layer in the surface of a gallium arsenide substrate comprising the steps of:

a. preparing a cadmium doped P-type gallium arsenide substrate;

b. implanting a 220 KeV ion dose of tellurium into the surface of said P-type gallium arsenide at 350° C with an incident beam at least 10° from any low-index axis;

c. sputtering a coating of aluminum nitride onto said implanted surface and

d. heating said coated surface to a temperature of about 900° C for about 10 minutes in flowing hydrogen to effect an anneal of said implanted surface to form a submicron N-type layer therein.

4,058,414

METHOD OF MAKING COLD-ROLLED HIGH STRENGTH STEEL SHEET

Takashi Matsuoka, Osaka, Japan, assignor to Sumitomo Metal Industries, Ltd., Japan

Filed Dec. 30, 1975, Ser. No. 645,330
Int. Cl.[2] C21D 7/02, 7/14, 9/46
U.S. Cl. 148—12 F 2 Claims

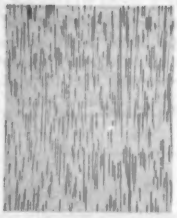
1. In the process of manufacturing a cold-rolled, high strength steel sheet in which a steel containing, in addition to iron and silicon, 0.03 to 0.2% by weight of carbon, 1.3 to 3.0% by weight of manganese and either (a) 0.01 to 0.25% by weight of niobium, or 0.01 to 0.2% by weight of titanium or (b) 0.01 to 0.3% by weight of niobium and titanium is hot rolled and cold rolled into a steel sheet which sheet is then annealed at a temperature of from 620° C to the A_3 transformation point, the improvement which consists of utilizing from 1.0 to 1.5% by weight of silicon.

4,058,415

DIRECTIONALLY SOLIDIFIED COBALT-BASE EUTECTIC ALLOYS

John L. Walter, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 30, 1975, Ser. No. 627,067
Int. Cl.[2] C22C 19/07
U.S. Cl. 148—32 12 Claims



1. An article of manufacture having improved high temperature properties, improved fiber volume fraction and improved fiber density comprising a unidirectionally solidified anisotropic metallic casting comprising

a. a matrix of cobalt-base superalloy consisting essentially of, on a weight basis, 10–20% nickel, 8.1–25% tungsten and less than 10% chromium, 10–23% tantalum, 0.1–1.5% carbon and the balance being essentially cobalt; and

b. an aligned eutectic predominantly tantalum monocarbide reinforcing fibrous phase embedded in the matrix.

4,058,416

MATRIX-STIFFENED HEAT AND CORROSION RESISTANT WROUGHT PRODUCTS

Herbert Louis Eiselstein; Edward Frederick Clatworthy, and Darrell Franklin Smith, Jr., all of Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.

Division of Ser. No. 654,595, Feb. 2, 1976, Pat. No. 4,026,699.
This application Feb. 9, 1977, Ser. No. 767,217
The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.
Int. Cl.[2] C22C 38/48
U.S. Cl. 148—32 6 Claims

1. A wrought product consisting essentially of 17% to 22% chromium, nickel in an amount up to 44% and at least sufficient to satisfy the relationship % Ni equal at least 4/3 (% Cr) plus 8.8, 1.75% to 3.0% columbium, up to about 1% manganese, up to about 1% silicon, up to about 0.1% carbon, up to about 0.5% titanium provided the total of % Ti plus 0.216 (% Cb) does not exceed 0.85%, up to about 0.5% aluminum and balance iron with any presence of molybdenum and tungsten not exceeding 0.5% molybdenum and 0.5% tungsten and characterized by a hot-worked austenitic microstructure.

4,058,417

TURBINE BUCKET ALLOY

Richard Thomas Bicicchi, Boxford, and Albert Samuel Melilli, Winchester, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 552,515, Feb. 24, 1975, abandoned.
This application Apr. 23, 1976, Ser. No. 679,700
Int. Cl.[2] C22C 38/44
U.S. Cl. 148—37 3 Claims

1. A forged turbine bucket formed from an alloy having a martensitic structure and free from ferrite throughout, said alloy consisting essentially of:

Element	Weight Percent
Carbon	.05 – .07
Manganese	.70 – 1.00
Phosphorus	.020 max.
Sulphur	.020 max.
Silicon	.30 – .50
Nickel	3.50 – 4.25
Chromium	11.20 – 12.25
Molybdenum	.30 – .50
Aluminum	.03 max.
Vanadium	.03 max.
Tin	.03 max.
Iron	Remainder

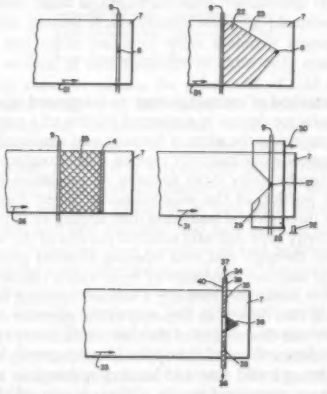
the forged alloy product being characterized by a yield strength (0.02% — offset) in excess of 100,000 psi and a tensile strength in excess of 130,000 psi.

4,058,418

FABRICATION OF THIN FILM SOLAR CELLS UTILIZING EPITAXIAL DEPOSITION ONTO A LIQUID SURFACE TO OBTAIN LATERAL GROWTH

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Continuation of Ser. No. 456,727, April 1, 1974, abandoned. This application July 14, 1975, Ser. No. 595,418
Int. Cl.[2] H01L 27/14, 29/04, 31/04
U.S. Cl. 148—175 12 Claims



1. A method of making a thin film of substantially monocrystalline silicon suitable for use in silicon solar cells, comprising

a. providing a carrier having a melting point above the temperature at which the silicon is to be deposited.

b. applying to the carrier a coating that is maintained in a liquid state at least at the region at which the silicon is to

be deposited, said coating comprising an impurity that acts as a dopant for the silicon,

c. depositing a seed of silicon crystal on the liquid carrier coating,

d. directing the deposition of silicon on said coating by means that limits the area of said coating subject to deposition,

e. effecting relative movement between said silicon deposition limiting means and said carrier so that the silicon seed is expanded in a lateral direction into a film of silicon, and

f. continuing said relative movement at a rate and direction of deposition such that later deposited silicon orients itself to the previously deposited silicon in a lateral and highly ordered form as contrasted with amorphous, epitaxial growth and the dopant in the liquid coating diffuses into the silicon to form a doped layer therein.

4,058,419

METHOD OF MANUFACTURING INTEGRATED INJECTION LOGIC SEMICONDUCTOR DEVICES UTILIZING SELF-ALIGNED DOUBLE-DIFFUSION TECHNIQUES

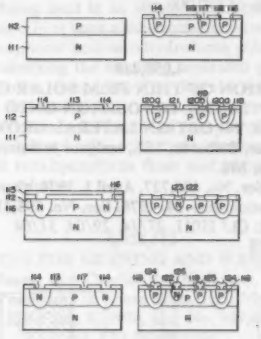
Yukuya Tokumaru; Masanori Nakai; Satoshi Shinozaki; Junichi Nakamura; Shintaro Ito, and Yoshio Nishi, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric, Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1975, Ser. No. 644,294

Claims priority, application Japan, Dec. 27, 1974, 50-148795; Dec. 27, 1974, 50-148796; Dec. 27, 1974, 50-148797; Dec. 27, 1974, 50-1913

Int. Cl.[2] H01L *21/22, 21/76, 27/04*

U.S. Cl. 148—175 **5 Claims**



1. A method of manufacturing an integrated injection logic semiconductor device in a selected portion of a semiconductor layer comprising the steps of forming said semiconductor layer of the opposite conductivity type on a semiconductor substrate of one conductivity type; forming an insulation film on said selected portion of the semiconductor layer; forming a first opening through said insulation film; doping an impurity of one conductivity type into said selected portion of the semiconductor layer through said first opening thereby forming a first region of said one conductivity type which reaches said semiconductor substrate; forming a second opening through said insulation film doping an impurity of the opposite conductivity type into said first region of the one conductivity type and said semiconductor layer of the opposite conductivity type respectively through said first and second openings in an oxidizing atmosphere thereby forming a first region of the opposite conductivity type completely within said first region of said one conductivity type and a second region of the opposite conductivity type in said selected portion of the layer; semiconductor forming a third opening through said insulation film doping an impurity of one conductivity type into said selected portion of the semiconductor layer through said third opening in an oxidizing atmosphere thereby forming a second region of said one conductivity type in said semiconductor layer of the opposite conductivity type.

4,058,420

AQUEOUS SLURRY EXPLOSIVES WITH COLLOIDAL HYDROUS METAL OXIDE

Phillip Barnhard, IV, Provo, Utah, and Francis John Kieres, Shenandoah, Pa., assignors to IMC Chemical Group, Inc., Terre Haute, Ind.

Filed Dec. 13, 1976, Ser. No. 750,038

Int. Cl.[2] C06B *45/00*

U.S. Cl. 149—2 **26 Claims**

1. An improved thickened aqueous slurry explosive of the type containing an inorganic oxidizing salt, a fuel, and water, wherein the improvement comprises a thickening amount of a colloidal hydrous metal oxide.

4,058,421

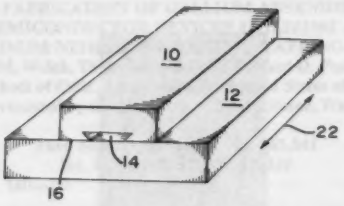
METHOD OF JOINING NON-FUSIBLE WORKPIECES USING FRICTIONAL ENERGY

Arthur M. Summo, Londonderry, N.H., assignor to Branson Ultrasonics Corporation, New Canaan, Conn.

Filed Oct. 7, 1976, Ser. No. 730,305

Int. Cl.[2] B32B *31/20*

U.S. Cl. 156—73.5 **9 Claims**



1. A method of joining two normally non-fusible polymeric plastic workpieces or two workpieces having different melting points to one another comprising:

placing two workpieces into contact along planar mating surfaces, one of said workpieces having a recess extending from its mating surface into the interior of the respective workpiece and said recess being shaped for trapping material;

applying a static force between said workpieces to urge them into intimate contact with one another along said surfaces;

subjecting said workpieces to relative linear reciprocating motion with respect to one another in the plane of said surfaces for causing resulting from frictional energy softening of the material along the mating surface of said other workpiece and effecting flowing of such softened material into the recess provided in said one workpiece, and

ceasing said relative motion for causing said softened material to solidify whereby said workpieces become joined on account of the trapped solidified material.

4,058,422

APPARATUS FOR BONDING TREADS TO TIRES

Don A. Taylor, Wadsworth, Ohio, assignor to Victor E. Buehrle, Akron, Ohio

Filed Sept. 20, 1976, Ser. No. 724,951

Int. Cl.[2] B29H *17/36*

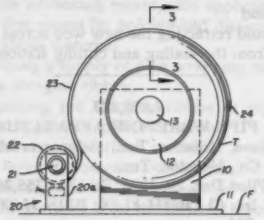
U.S. Cl. 156—96 **17 Claims**

1. Apparatus for bonding tread material to a tire carcass, comprising:

A. a belt windup drum located adjacent to a rotatably mounted tire carcass;

B. an elongate flexible belt carried by said drum with one end secured thereto;

C. electrical resistance heat imparting means carried by said flexible belt;



D. means for removably attaching the opposed end of said belt to the exterior surface of the tread material; and

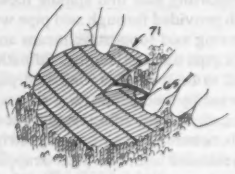
E. said flexible belt having a length sufficient to encircle the periphery of the tire carcass and said tread material.

4,058,423

CARPET REPAIR DISK AND TOOL

Hollis H. Bascom, 1247 DePaul Way; John J. Greci, 1442 Third St., both of Livermore, Calif. 94550, and Merle R. Hoopengardner, 879 Mountain View Drive, Lafayette, Calif. 94549

Filed July 16, 1976, Ser. No. 705,911
Int. Cl.² B32B *35/00*
U.S. Cl. 156—98 **10 Claims**



1. A method of repairing a damaged area of a carpet and comprising,

cutting a circular plug which contains the damaged area,

removing the plug to leave a circular opening in the carpet,

cutting a matching patch plug from another portion of carpet,

inserting a unitary carpet repair disk through the opening and into backup position under the opening and the carpet, said disk having a larger diameter than the diameter of the opening cut in the carpet so that the outer periphery of the repair disk engages the back side of the carpet entirely around the opening,

installing the patch plug in the opening,

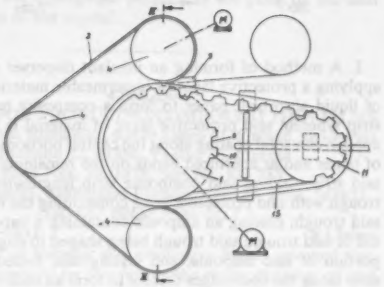
adhering the patch plug and the repair disk to retain the patch plug in place, and wherein the carpet repair disk comprises a barrier sheet, having a non-woven fabric strand reinforcement adhered to one surface of the sheet and a pressure sensitive adhesive on said one surface for adhering the strand reinforcement to the back surface of the patch plug and the carpet around the patch opening to hold the patch plug in place and wherein the carpet repair disk includes a silicone treated release paper on the pressure sensitive adhesive and including the step of peeling off the silicone treated release paper prior to inserting the carpet repair disk through said opening cut in the carpet.

4,058,424

METHOD OF AND DEVICE FOR PRODUCING IN A CONTINUOUS OPERATION ENDLESS DRIVING BELTS OF ANY DESIRED CIRCUMFERENTIAL LENGTH

Rudolf Breher, Porta Westfalica, Germany, assignor to BRECO Kunststoffverarbeitungs-GmbH & Co. KG, Porta Westfalica, Germany

Filed June 14, 1976, Ser. No. 695,379
Claims priority, application Germany, June 14, 1975, 2526691
Int. Cl.² B29F *1/10*
U.S. Cl. 156—137 **12 Claims**



1. A device for producing in a continuous manner endless driving belts of any desired circumferential length and of extrudable synthetic material with a pull-resistant reinforcing insert extending in the longitudinal direction of the belt to be produced, which includes: a rotatable molding drum provided with a cylindrical shoulder arranged at one end of said drum and having a diameter slightly greater than the remainder of said drum, a molding belt movable over a circumferential section of said drum in radially spaced relationship thereto so as to confine therewith arc-shaped molding chamber means with inlet and outlet sections while sealingly engaging the peripheral surface of said shoulder to close only one side of said molding chamber means, the other side of said molding chamber means being open, inlet means for synthetic material and inlet means for the pull-resistant reinforcing insert arranged at said inlet section of said molding chamber means, a tensioning wheel arranged in axis parallel spaced relationship to said molding drum and adjustable relative to said drum, sealing means sealingly engaging at said inlet section said molding drum and said shoulder and said molding belt, said sealing means extending over a portion of said molding chamber means in the axial direction of said drum, deviating means interposed between said drum and said tensioning wheel and operable to laterally displace a belt strip leaving said outlet section and passing from said drum over said tensioning wheel back to said drum and said inlet section so that said belt strip again enters said molding chamber means offset in axial direction of said drum by the width of said sealing means and sealingly engages that side of said sealing means which faces away from said shoulder while the open side of said molding chamber means is sealingly closed by the respective last returned belt strip, said synthetic material and reinforcing insert being formed into a continuous formation of a reinforced strand of synthetic material finally being adapted to be cut into rings by suitable standard cutting means.

4,058,425

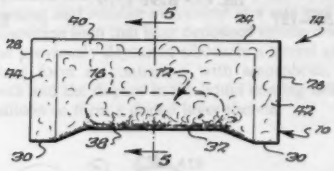
INHALANT DISPERSER

James L. Thrun, Orchard Park, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Division of Ser. No. 379,362, July 16, 1973, Pat. No. 3,881,634. This application Mar. 18, 1974, Ser. No. 452,079

Int. Cl.² B29D *23/00;* B31F *1/00*

U.S. Cl. 156—200 3 Claims



1. A method of forming an inhalant disperser comprising: applying a protective layer of impermeable material on a strip of liquid absorbent paper to form a composite multi-layered strip wherein said protective layer of material is an adhesive applied as a solid coating along the central portions of said strip of paper and as apertured bands on the remaining portions of said strip; folding said composite strip lengthwise to form a trough with said protective layer constituting the inner wall of said trough; placing an ampoule containing a vaporizable liquid in said trough; said trough being shaped to engage a major portion of said ampoule; and sealing said folded composite strip along the open edges thereof to form an enclosure for said ampoule, said adhesive on said strip being meltable under elevated temperatures to effect said sealing of said open edges upon the application of heat thereto in a manner wherein said vaporizable liquid may pass readily through at least portions of said apertured bands.

4,058,426

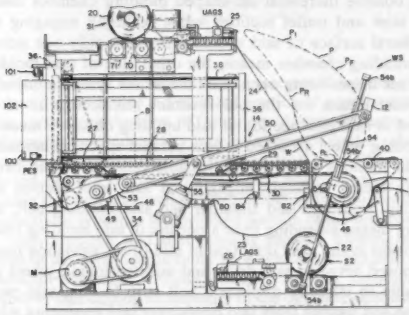
METHOD AND APPARATUS FOR WRAPPING OBJECTS WITH A SEALABLE WRAP

James A. Pasic, and Marvin I. Berg, both of Montesano, Wash., assignors to Ovalstrapping, Inc., Hoquiam, Wash.

Filed June 9, 1976, Ser. No. 694,081

Int. Cl.² B31F *31/00*

U.S. Cl. 156—212 16 Claims



12. The method of delivering two sealable lengths of wrap to a wrapping station to form a web and be wrapped around an object moving along a horizontal path, comprising:

storing the wraps at a storage station on opposite sides of the path, holding the wraps against movement at the storage station,

joining the wraps at a sealing and cutting location,

moving the object into engagement with the web to pull the web along the path,

releasing the held, stored wrap at the storage station and providing a free unrestricted path between the storage station and the object as the object pulls the web to eliminate resistance to movement of the web as the object pulls the web,

cutting the web behind the object and sealing the wraps to form a new web behind the object at a cutting and sealing station, and

tightening and retracting the new web across the path rearwardly from the sealing and cutting station.

4,058,427

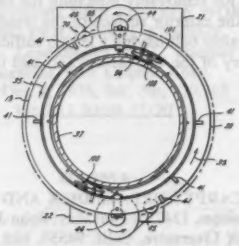
PIPE WRAPPING APPARATUS

Daniel F. Wilson, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Filed Dec. 29, 1976, Ser. No. 755,261

Int. Cl.² B65H *81/00;* B32B *31/00*

U.S. Cl. 156—392 14 Claims



1. Pipe wrapping apparatus, comprising first spindle means adapted to hold a roll of pipe wrapping tape having a strip of backing material removably adhered to one surface thereof, means for supporting said first spindle means adjacent a pipe receiving path provided through said pipe wrapping apparatus, means for moving said supporting means and said first spindle means about a pipe disposed along said path to draw said tape from said roll to be wound around said pipe, second spindle means supported by said supporting means adjacent said first spindle means, means for rotating said second spindle means about its axis whereby said backing strip may be wound thereon and removed from said pipe wrapping tape before said pipe wrapping tape is wound around said pipe.

4,058,428

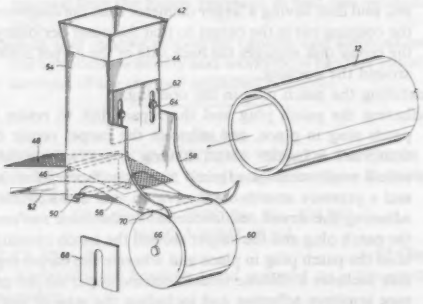
PIPE COATING MACHINE

Patrick P. Case, and David L. Gardner, both of Conroe, Tex., assignors to Compression Coat Corporation, Houston, Tex.

Filed Feb. 4, 1974, Ser. No. 439,322

Int. Cl.² B65H *81/08;* F16L *9/16*

U.S. Cl. 156—429 6 Claims



1. An apparatus for applying a cementatious coating to a pipe on the exterior thereof, comprising:

means for advancing a pipe to be coated along its axis, said means moving consecutive sections of pipe along a specified path;

applicator means for applying a cementatious weight material to a pipe moving in a path determined and controlled by said pipe advancing means, said applicator means including a first means for holding and dispensing a supply of cementatious material;

means for storing a supply of pipe wrapping material in the form of an elongate ribbon;

means for guiding the elongate ribbon of pipe wrapping material through said applicator means;

said applicator means further including a second means placing a layer of cementatious material from said first means on an exposed surface of the pipe wrapping material wherein the layer is on the surface thereof facing the pipe prior to application;

third means for rotating the pipe as cementatious material and the pipe wrapping material are placed on the pipe by said applicator means, said third means continuously presenting to said applicator means an uncoated portion of the pipe;

a rotatable drum having an outer cylindrical surface approximately parallel to the axis of the pipe and spaced therefrom; and

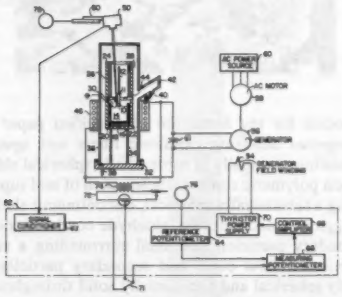
said applicator means further including a fourth means which guides the pipe wrapping material after the exposed surface thereof has had a layer of the cementatious material coated thereon into the space between the pipe and said drum in a manner such that said drum, presses against the uncoated surface of the coated pipe wrapping material and squeezes the cementatious material into contact with the pipe, said drum controlling the thickness of the cementatious material applied to the pipe by squeezing the excess, if any, away from the pipe.

4,058,429

INFRARED TEMPERATURE CONTROL OF CZOCHRALSKI CRYSTAL GROWTH

Charles Duncan, Penn Hills Township, Alleghany County, and Richard H. Hopkins, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 4, 1975, Ser. No. 637,550
Int. Cl.² B01J *17/18*
U.S. Cl. 156—601 **16 Claims**



1. A method for controlling the diameter of a crystal grown by withdrawing a seed from a melt, said method comprising:

withdrawing the growing crystal from the melt at a constant rate;

sensing the infrared spectrum of a point on the surface of the melt adjacent to said crystal to determine the instantaneous temperatures of said melt at said point; and

controlling the temperature at the point on the surface of said melt in response to an average of the instanteneous temperatures at the point on the melt determined over a predetermined period of time.

4. Apparatus for growing a crystal of controlled diameter by withdrawing a seed at a constant rate from a melt, said apparatus comprising:

temperature sensing means for providing an output signal in response to the instantaneous melt temperature at a point on the surface of said melt adjacent to the crystal;

means for heating the melt;

means for energizing said heating means; and

temperature control means responsive to the output signal of said temperature sensing means, said temperature control means determining an average of the output signal of said temperature sensing means and controlling said energizing means with respect to the average of the output signal to control the average temperature of the point on the melt adjacent to the crystal.

4,058,430

METHOD FOR PRODUCING COMPOUND THIN FILMS

Tuomo Suntola, Riihikallio, 02610 Espoo 61, Finland, and Jorma Antson, Urheilutie 22, 01350, Vantaa 35, Finland

Filed Nov. 25, 1975, Ser. No. 635,233
Claims priority, application Finland, Nov. 29, 1974, 743473
Int. Cl.² B05D *5/00, 5/12*
U.S. Cl. 156—611 **8 Claims**

1. Method of forming and growing a highly oriented thin film of a compound by reaction of the single elements of said compound on a substrate, which comprises subjecting said substrate to the vapor of a first single element which can react with the surface of said substrate at a temperature sufficiently high for such reaction to occur and too high for vapors of said first single element to condense on the surface which is formed, whereby a single atomic layer of said first single element is formed on said surface, subjecting the thus formed surface of said first single element atomic layer to the vapor of a second single element which can react with said first single element at a temperature sufficiently high for such reaction to occur and too high for vapors of said second single element to condense on the surface which is formed, whereby a single atomic layer of said second element is formed on said surface bound to said first single element, and alternately subjecting the thus formed surface under the same conditions to vapors of single elements each of which can react with the surface single element until the formed compound film reaches a desired thickness.

4,058,431

METHOD OF ETCHING COPPER AND COPPER ALLOYS

Rainer Haas, Magstadt, Germany, assignor to Firma Hans Höllmüller, Maschinenbau, Herrenberg, Germany

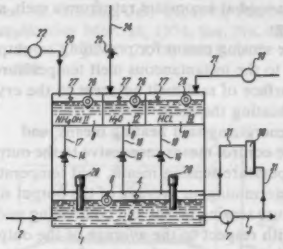
Division of Ser. No. 386,021, Aug. 6, 1973, Pat. No. 3,933,544, which is a division of Ser. No. 230,871, March 1, 1972, Pat. No. 3,806,393. This application Oct. 20, 1975, Ser. No. 624,776
Claims priority, application Germany, Mar. 8, 1971, 2110950
The portion of the term of this patent subsequent to Jan. 20, 1993, has been disclaimed.
Int. Cl.² C23F *1/00*
U.S. Cl. 156—627 **6 Claims**

1. A method of etching copper and copper alloys, comprising the steps of:

treating copper or a copper alloy with an etching medium consisting of an ammoniacal etching solution containing chloride ions, thereby producing a copper-I compound;

regenerating the copper-I compound by reacting therewith a chloro compound and by the addition of water to said solution at a rate controlled in dependence upon the rate of formation of said copper-I compounds, the regenera-

tion rate being controlled at least in part by monitoring the specific gravity of the solution; and



supplying to said solution as amount of ammoniacal compound such that the pH value of the latter is maintained at about 8.5 to 10.0.

4,058,432

PROCESS FOR PRODUCING A THIN METAL STRUCTURE WITH A SELF-SUPPORTING FRAME

Hans Schuster-Woldan, Woerthsee-Steinebach; Kaspar Weingand, Lochham, and Dirk Koch, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 17, 1976, Ser. No. 667,531
Claims priority, application Germany, Mar. 19, 1975, 2512086
Int. Cl.² H01L *21/312*
U.S. Cl. 156—659 **10 Claims**

1. A process for producing a thin metal structure, such as a grid, with a self-supporting frame which has a thickness substantially greater than the thickness of the thin metal structure, the process comprising the steps of providing a carrier member having a size and thickness of the self-supporting frame and first and second surfaces, forming a galvanic resistant coating on the first surface of the carrier member, said coating exposing portions of said first surface adjacent each of the edges of the carrier member and portions of the first surface in the configuration of the metal structure to be formed with all portions being interconnected, galvanically depositing a layer of metal on the exposed portions of the first surface to produce the thin metal structure having a continuous border portion, removing the galvanic resistant coating, applying an etch resistant coating on the edges of the carrier member and at least a portion of the second surface adjacent the edges of the carrier member, selectively etching the carrier member to remove all of the carrier members except that portion protected by the etch resistant coating to form the thin metal structure mounted on a self-supporting frame.

4,058,433

CONVERSION OF SULFUR IN BLANK LIQUOR TO ELIMINATE ODOROUS EMISSIONS AND FACILITATE THE COLLECTION OF SULFATE SOAPS

Robert R. Fuller, and Donald Blanton Morris, both of Tuscaloosa, Ala., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed Mar. 6, 1975, Ser. No. 555,872
Int. Cl.² D21C *11/08*
U.S. Cl. 162—16 **29 Claims**

1. A method of oxidizing substantially all of the sulfur in weak black liquor from a kraft pulp process which comprises oxidizing sulfur in the weak liquor at a point in the process between the blow tank and the pulp washer by the injection into the liquor of sufficient oxygen-rich gas to oxidize substantially all of the sulfur present in the weak black liquor and until

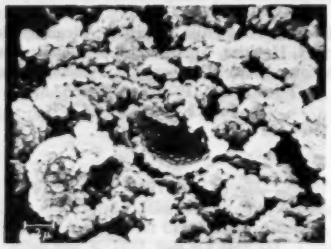
the sulfide concentration in the weak black liquor is substantially zero.

4,058,434

OPACIFIED PAPER SHEET AND METHOD FOR PRODUCTION THEREOF

David N. Vincent, Glenview, and Ronald Golden, Mt. Prospect, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Division of Ser. No. 508,322, Sept. 23, 1974. This application Aug. 24, 1976, Ser. No. 717,175
Int. Cl.² D21D *3/00;* D21H *3/52, 3/56*
U.S. Cl. 162—165 **24 Claims**



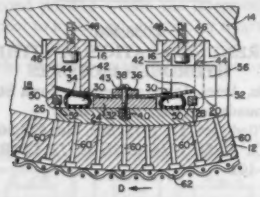
1. A process for the formation of opacified paper sheet, which comprises admixing cellulosic fibers and opacifying agents consisting essentially of substantially spherical aldehyde condensation polymeric super-particles, each of said super-particles having a substantially spherical, discontinuous shell composed of agglomerated, discrete, aldehyde condensation polymeric secondary particles, said shell surrounding a substantially spherical hollow core, said secondary particles being substantially spherical and substantially solid throughout, and forming said admixture into a paper sheet.

9. A paper sheet consisting essentially of cellulosic fibers having opacifying agents incorporated therein, said opacifying agents consisting essentially of substantially spherical aldehyde condensation polymeric super-particles, each of said super-particles having a substantially spherical, discontinuous shell composed of agglomerated, discrete, aldehyde condensation polymeric secondary particles, said shell surrounding a substantially spherical hollow core, said secondary particles being substantially spherical and substantially solid throughout.

4,058,435
SEAL ASSEMBLY FOR PRESSURE OR VACUUM CHAMBERS

Glenn V. Williams, Jr., Monroe, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed July 15, 1976, Ser. No. 705,435
Int. Cl.[2] D21F 3/10
U.S. Cl. 162—371 12 Claims



1. Seal assembly for use in forming a zone or chamber in which pressure or vacuum may be applied in the interior of a vacuum roll such as is used in the manufacture of paper comprising:

a. a generally elongate sealing element having an arcuate sealing surface conforming generally in curvature to that of the interior of the roll in which it is to be incorporated;

b. a generally flat spring unit disposed radially inwardly of said sealing element and being substantially equal to said sealing element in axial length and in circumferential width;

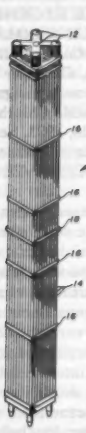
c. loading means disposed between said sealing element and said spring unit to selectively apply a load for urging said sealing element away from said spring unit to a sealing condition; and

d. means securing said sealing element and said spring unit together with said loading means therebetween and said spring unit urging said sealing element toward a non-sealing position.

4,058,436
NUCLEAR REACTOR SEISMIC FUEL ASSEMBLY GRID

Andrew J. Anthony, Tariffville, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Dec. 5, 1975, Ser. No. 638,100
Int. Cl.[2] G21C 3/30
U.S. Cl. 176—78 13 Claims



1. A fuel assembly for a nuclear reactor comprising:

at least a first grid for supporting a plurality of elongated fuel elements in a spaced apart substantially parallel relationship, said spacer grid including:

a perimeter strip which defines the periphery of the spacer grid, said parameter strip having a central portion and pair of oppositely disposed integral edge portions, said central portion and edge portions extending along the length of the perimeter strip and completely about the spacer grid, said perimeter strip edge portions being bent inwardly with respect to said control portion at an angle of less than 90° C, said inwardly angled perimeter strip edge portions being terminated so as to provide a clearance between said perimeter strip edge portions and fuel elements received in said spacer grid, said perimeter strip central portion being provided with a plurality of openings therein, said openings being aligned with the fuel elements received in said spacer grid, said perimeter strip central portion further being provided with inwardly extended projections respectively located above and below each of said openings; and

a plurality of divider members positioned within said perimeter strip, said divider members intersecting said perimeter strip intermediate the openings therein and being mechanically joined to said perimeter strip, said divider members being arranged in a crossing pattern to define a grid which receives a fuel element in each grid sector, the outer row of sectors of said grid being in part defined by said perimeter strip, said divider members including:

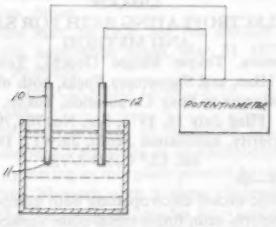
fuel element locating springs, said springs being positioned so as to extend into the sectors of said grid, one of said locating springs extending from a divider member oriented generally parallelly to said perimeter strip into every second one of the grid sectors of the outer row and toward said perimeter strip; and

back-up arches formed on at least the divider members which are adjacent to and generally parallel with said perimeter strip, said back-up arches being adjacent to the springs which extend into every second grid sector of the outer row, said back-up arches extending toward said perimeter strip a lesser distance when compared to said locating springs whereby said back-up arches limit the compression of said locating springs by limiting the motion of the fuel elements.

4,058,437
PROCESS FOR SELECTIVELY MEASURING SODIUM IONS IN SOLUTION

Chung Chang Young, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 689,310, May 24, 1976, which is a division of Ser. No. 511,720, Oct. 3, 1974, Pat. No. 3,988,234. This application Oct. 12, 1976, Ser. No. 731,258
Int. Cl.[2] G01N 27/36
U.S. Cl. 204—1 T 20 Claims



1. In a process for selectively measuring sodium ions in an aqueous ionic mixture containing sodium and other monovalent cations including the step of contacting a sodium ion selective glass electrode with said mixture and obtaining a

resulting potentiometric response as a measure of the sodium ion concentration of said mixture, the improvement wherein said sodium ion selective glass electrode is provided with a glass sensing membrane formed from a glass composition consisting essentially of:

Component	Mole %
Na_2O	5–25
Al_2O_3	0–20
Ta_2O_5	1–10
SiO_2	60–82

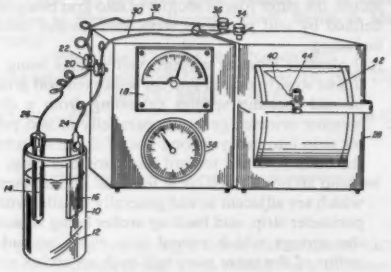
wherein $\frac{Ta_2O_5 + Al_2O_3}{Na_2O} \geq 0.2$.

4,058,438

RAPID UNIVERSAL SENSING CELL

William J. Russell, Sparta, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 597,059, July 18, 1975, abandoned. This application Oct. 28, 1976, Ser. No. 736,614
Int. Cl.² G01N *27/00;* C25F *3/00;* G01N *27/26*
U.S. Cl. 204—1 T 2 Claims



1. A method for determining etching time for preparing a consistent metal surface for resistance welding and adhesive bonding which comprises:

electrically coupling a standard half cell and a sample of the material to be etched to the terminals of a potentiometer;

placing the sample to be etched in an etchant-electrolyte bath;

placing a standard half cell in said bath;

monitoring the potential being produced by said etchant-electrolyte bath in combination with said standard half cell and the sample being etched;

recording the elasped time at which the potential measured by said potentiometer approaches a steady value.

4,058,439

NICKEL ELECTROPLATING BATH FOR SATIN FINISH AND METHOD

Toshio Tamura, Tokyo; Shigeo Oouchi, Yokahama; Kenji Oosawa, Hino, and Shimetomo Fueki, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 16, 1976, Ser. No. 705,797
Claims priority, application Japan, July 17, 1975, 50-87586
Int. Cl.² C25D *3/12*
U.S. Cl. 204—49 19 Claims

1. An acidic nickel electroplating bath composition for obtaining a uniform satin-finish metal plate surface on the material plated which comprises

(1)	nickel	25	to	170 gm/l
(2)	polyamide resin dissolved in a low molecular weight alcohol having 1 to 3 carbon atoms	1	to	10,000 ppm
(3)	polishing agent	0.1	to	40 gm/l

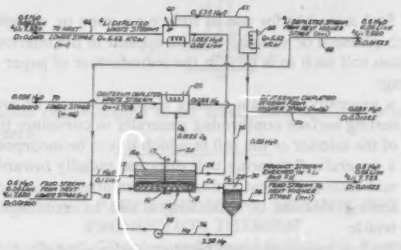
wherein nickel is dissolved and forms a continuous aqueous phase solution and the polyamide resin is dispersed in the aqueous phase to form a stable emulsion.

4,058,440

CONCURRENT SEPARATION OF LITHIUM AND HYDROGEN ISOTOPES

August Valfells, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 17, 1975, Ser. No. 623,361
Int. Cl.² C25B *1/14;* C22B *26/12;* C01B *1/07*
U.S. Cl. 204—101 13 Claims



1. A method of separating light hydrogen and deuterium, said method comprising,

reacting an alkali metal amalgam with water to provide an alkali metal hydroxide solution and hydrogen,

removing the evolved hydrogen, said solution of alkali metal hydroxide being enriched in deuterium, and

separating the alkali metal hydroxide or the corresponding alkali metal from said solution to provide deuterium enriched water, and thereafter, reacting repeatedly in the same manner the deuterium enriched water with alkali metal amalgam to provide a continually increasing enrichment of deuterium.

4,058,441

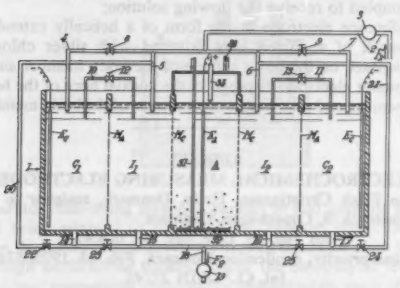
PROCESS FOR THE REGENERATION OF SPENT PICKLING SOLUTIONS

Andrée Bonnemay nee Couture, Boulogne; Jean Royon, La Varenne; Jean Bereau, Chatenay Malabry, and Jean-Claude Catonne, Ivry, all of France, assignors to Societe d'Etude pour la Regeneration de l'Acide Chlorhydrique SEPRAC, France

Filed May 28, 1975, Ser. No. 581,674
Claims priority, application France, May 28, 1974, 74.18478
Int. Cl.² C25B *1/22;* C25C *1/06*
U.S. Cl. 204—103 5 Claims

1. A process for the regeneration of spent pickling solutions based upon hydrochloric acid, after use upon ferriferous surfaces and therefore containing iron chlorides, using an electrodialysis cell defining an anodic compartment as well as at least one intermediate compartment adjacent said anodic compartment and a cathodic compartment adjacent each intermediate compartment, each said cathodic compartment having a cathode therein and being separated by an anion-selective membrane from the adjacent intermediate compartment, the anodic compartment having an anode therein and being separated by a cation-selective membrane from each adjacent intermediate compartment, electric circuitry being provided for connecting said anode and each said cathode to a source of direct electric current, comprising the steps of introducing within the anodic compartment of said cell an anolyte with characteristics such

that the overall faradaic yield for oxidation of water is about 1, whereby substantially all the electric current at the anode is used for the oxidation of water; introducing a first and a second portion of the spent pickling solution respectively and simultaneously into the cathodic compartment and into the intermediate compartment of said cell; and subjecting the first and second portions to an electrolytic treatment so as to deplete the first portion within the cathodic compartment with respect to iron by electrodeposition thereof upon the cathode and so as to enrich the second portion within the intermediate compartment with respect to hydrogen chloride by migration of chloride ions from the first portion through the anion-selective membrane to the second portion, the chloride ions originating



in the cathodic compartment as a result of the removal of iron from the first portion by the electrodeposition of iron upon the cathode, and by migration of hydrogen ions from the anolyte through the cation-selective membrane to the second portion, the hydrogen ions originating from the oxidation of water in the anodic compartment, said electrolytic treatment being conducted in such a manner as to establish and maintain (i) a cathodic current density of from 0.1 to 20 A/dm^2, (ii) an anodic current density corresponding to the water-oxidation reaction, and (iii) a current density at the membranes such that their perm-selectivity is about 1, the arrangement being such that at any time the ionic strength in equivalents of the regenerated solution is equal to the ionic strength in equivalents of the untreated spent pickling solution.

4,058,442

PHOTOPOLYMERIZABLE COMPOSITION FOR FORMED-IN-PLACE ARTIFICIAL NAILS

Henry L. Lee, Jr., Pasadena; Jan A. Orlowski, and Carl H. Fromm, both of Altadena, all of Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

Filed Sept. 15, 1975, Ser. No. 613,287

Int. Cl.^{2} C08L *1/32;* **C08F** *2/46, 8/00*

U.S. Cl. 204—159.12 **16 Claims**

1. A composition that is readily applicable to human nails for cosmetic, protective and other purposes, and that polymerizes upon exposure to ultraviolet radiation, for the production of artificial nails by direct application to human nail tissue and curing by exposure to a controlled source of radiation, consisting essentially of, in admixture:

i. from about 40% to about 90% by weight of the composition of a monofunctional ester monomer selected from the group consisting of esters of acrylic acid and 1–4 carbon alkyl-substituted acrylic acids with metyl, ethyl, propyl, isopropyl, butyl, isobutyl, furfuryl, tetrahydrofurfuryl and glycidyl alcohols, and mixtures of such esters;

ii. from about 3% to about 40% by weight of the composition of an ester monomer selected from the group consisting of esters of acrylic acid and 1–4 carbon alkyl-substituted acrylic acids with polyhydric alcohols containing 2 to 4 hydroxyl groups and mixtures of such esters;

iii. from about 0.1% to about 30% by weight of the composition of an initiator that acts upon exposure to ultraviolet radiation to initiate polymerization, and

iv. from about 5% to about 25% by weight of the composition of a modifier that is soluble or swellable in the admixture and is selected from the group consisting of particulate cured elastomers up to 300 microns in particle size, and mixtures of such elastomers with a particulate cellulose ester or a particulate cellulose ether-ester having up to 300 micron particle size in the ratio of at least 4.5 parts by weight of the former to each one party by weight of the latter,

said composition being characterized in that the composition after curing exhibits: an in vivo adhesion to natural human nails of at least about 25 pounds per square inch; a flexural modulus of elasticity of at least 50 × 10^3 pounds/square inch; a flexural strength of at least 3000 pounds/square inch, and an elongation to break under flexural stress of at least 3.5% as measured under ambient pressure and temperature conditions.

4,058,443

RECORDING MATERIAL

Masataka Murata; Keiji Takeda, and Teppei Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 29, 1975, Ser. No. 644,682

Claims priority, application Japan, Dec. 26, 1974, 49-444

Int. Cl.^{2} C08F *2/50, 4/00*

U.S. Cl. 204—159.17 **10 Claims**

1. A recording material comprising a support having thereon a layer of a photopolymerizable composition comprising (a) a binder combination, (b) a monomer having at least one addition-polymerizable unsaturated bond, and (c) a photopolymerization initiator, wherein the improvement comprises that said binder combination (a) consists of (1) a chlorinated polyolefin having a polymerization degree of from about 300 to about 20,000 and a chlorine content from about 40 to about 75% by weight based on the total resin weight selected from the group consisting of chlorinated polyethylene and chlorinated polypropylene, and (2) a straight-chained polymeric material having sufficient compatibility with said components (1), (b) and (c) and, a molecular weight above about 10,000, the ratio of component (2) to component (1) being from about 10% to about 90% by weight based on the total amount of said binder combination, the ratio of component (2) to the sum of components (1) and (2) being 0.1 to 0.9 by weight, and the ratio of component (b) to the sum of components (1) and (2) being 0.1 to 5 by weight.

4,058,444

PROCESS FOR PREPARING AN INSULATED PRODUCT

Kyoichi Shibayama; Fumihiko Satho, and Mamoru Naitho, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1976, Ser. No. 669,625

Claims priority, application Japan, Mar. 31, 1975, 50-39435; Mar. 31, 1975, 50-39436

Int. Cl.^{2} C25D *13/06, 13/10*

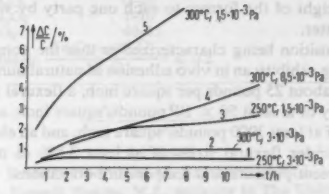
U.S. Cl. 204—181 **8 Claims**

1. A process for preparing an insulative product which comprises: immersing a substrate in an electrodeposition varnish prepared by mixing an inorganic powder having a particle size smaller than 20 mesh with a water dispersion varnish; electrodepositing the inorganic powder from said electrodeposition varnish to form an electrodeposited layer of high inorganic powder content on said substrate; and immersing said varnished substrate in an organic or an inorganic insulation varnish to impregnate the spaces of the electrodeposited layer with said insulation varnish.

4,058,445
METHOD OF PRODUCING A TANTALUM THIN FILM CAPACITOR

Wilfried Anders, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 26, 1976, Ser. No. 670,827
Claims priority, application Germany, Mar. 27, 1975, 2513858
Int. Cl.² C23C *15/00*; H01G *4/10*
U.S. Cl. 204—192 SP **4 Claims**



1. A method for producing heat-stable, dip-solderable thin film tantalum capacitors comprising the steps of:

mounting a thin film alpha tantalum electrode on a non-conducting supporting member, the tantalum being doped with nitrogen so as to have a minimum nitrogen content greater than the nitrogen content of beta tantalum and a maximum nitrogen content less than that of tantalum nitride,

forming a tantalum pentoxide film having dielectric properties on said tantalum electrode,

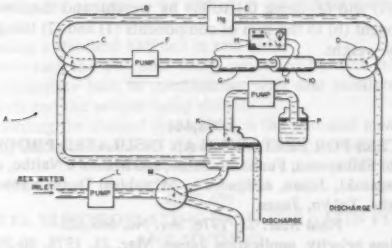
tempering at least the tantalum electrode and the dielectric film and

covering said dielectric film with another electrode of a film conducting material.

4,058,446
ANODIC STRIPPING VOLTAMMETRY SYSTEM AND COMBINATION ELECTRODE ASSEMBLY THEREFORE

Alberto Zirino; Cesar Clavell, both of San Diego, Calif., and Kent Huey, Anchorage, Alaska, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1976, Ser. No. 745,931
Int. Cl.² G01N *27/30, 27/42*
U.S. Cl. 204—195 R **9 Claims**



1. In an anodic stripping voltammetry system for measuring the presence and concentration of trace metals in a sample solution having a source of a metal plating solution, a means for sensing trace metals, a means for feeding the sample solution and the plating solution through the sensing means, a means coupled for alternately coupling the sample solution and the plating solution to the sensing means, a means for depositing a metal plating film on the sensing means while the plating solution is coupled to flow through the sensing means and for reducing trace metals on the metal plating film while the sample solution is alternately coupled to flow through the sensing means, and means for indicating the presence and concentration of trace metals in the sample solution, an improvement therefor is provided comprising:

a combination electrode including a tubularly shaped body member provided with a coaxial bore coupled to receive the flow of the plating solution and the sample solution, a reference electrode disposed on the outer surface of the body member, and a counter electrode disposed in the bore of the body member and reaching to the exterior of the body member both electrodes extending to the indicating means.

6. A combination electrode for receiving a flowing solution therethrough comprising:

a tubularly shaped body member fashioned from a porous polyethylene tube impregnated with a potassium chloride saturated agar solution and provided with a coaxial bore coupled to receive the flowing solution;

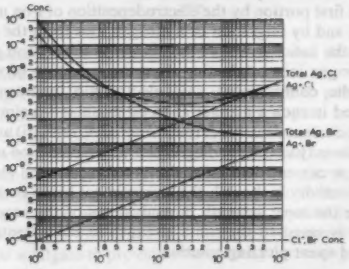
a reference electrode in the form of a helically extending length of anodized wire covered with silver chloride disposed on the outer surface of the body member and

a counter electrode disposed in the coaxial bore of the body member and reaching to the exterior of the body member.

4,058,447
ELECTROCHEMICAL MEASURING ELECTRODE

Torben Falch Christiansen, Holte, Denmark, assignor to Radiometer A/S, Copenhagen, Denmark

Filed Feb. 10, 1976, Ser. No. 656,873
Claims priority, application Denmark, Feb. 13, 1975, 532/75
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 P **2 Claims**



1. An electrode for polarographic measurement of the partial pressure of oxygen in gases or solutions, comprising a cathode in contact with and outwardly shielded by a gas permeable membrane, a silver/silver bromide half cell serving as anode and a bromide-containing aqueous electrolyte in contact with the cathode and the anode, the bromide ion concentration in the electrolyte being between 10^{-4} and 5×10^{-3}M.

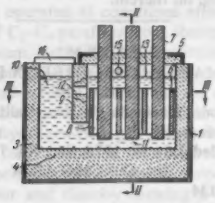
4,058,448
DIAPHRAGMLESS ELECTROLYZER FOR PRODUCING MAGNESIUM AND CHLORINE

Konstantin Dmitrievich Muzhzhavlev, Zheleznovodskaya ulitsa, 48, kv. 30; Sergei Petrovich Kosarev, Nalichnaya ulitsa, 39, korpus 1, kv. 20; Vladimir Ivanovich Schegolev, ulitsa Krasnaya, 50, kv. 30; Andrei Borisovich Ivanov, prospekt Smirnova, 59, kv. 151, all of Leningrad; Oleg Nikolaevich Romanenko, ulitsa Sevastopolskaya, 6, kv. 46, Kalush Ivano-Frankovskoi oblasti; Vladimir Dmitrievich Yazev, ulitsa Mira, 44, kv. 1, Solikamsk Permskoi oblasti, and Alexei Vasilievich Vasiliev, ulitsa Bogdana Khmelnitskogo, 66, kv. 57, Kalush Ivano-Frankovskoi oblasti, all of U.S.S.R.

Filed June 23, 1976, Ser. No. 698,936
Int. Cl.² C25C *3/04, 3/08*
U.S. Cl. 204—244 **8 Claims**

1. A diaphragmless electrolyzer for producing magnesium and chlorine, comprising: a refractory-lined shell having a

compartment for electrolyte defined between a bottom, walls and a covering of said shell; a chlorine discharge outlet fixed on said electrolyzer shell; graphite anodes arranged in groups in said electrolyzer shell, each of said anodes being shaped as a rectangular plate; steel cathodes accommodated in said electrolyzer shell, each of said cathodes being shaped as a frame which forms an enclosure around each of said graphite anodes and defines a gap between said cathode and said anode; a group of electrolytic cells, each of said electrolytic cells being confined between the surfaces of an adjacent graphite anode and steel cathode; at least one vertical refractory separator plate adjoining the covering and walls of the electrolyzer but being shorter in height than the walls of said electrolyzer shell, said



separator plate being arranged parallel to said graphite anodes and being adapted to isolate the magnesium collecting cell from the group of electrolytic cells, said separator plate having through perforations situated below the electrolytic level; at least two magnesium conveyance passageways, each of them being arranged at substantially right angles to said graphite anodes and to said separator plate and being confined between the wall of said shell of the diaphragmless electrolyzer and the portion of said steel cathode that faces towards the magnesium collecting cell said passageways having a width which is a maximum of three times the width of said gap between said adjacent graphite anode and steel cathode in each electrolytic cell.

4,058,449

HYDROCRACKING PROCESS

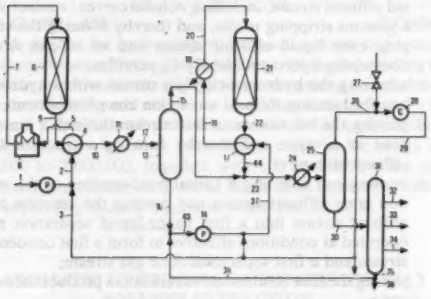
Ortwin Reitz, Heidelberg, Germany, and Jean-Pierre Rétoret, Saint Germain en Laye, France, assignors to Institut Francais du Petrole and BASF Aktiengesellschaft, both of Rueil-Malmaison, France

Filed May 21, 1976, Ser. No. 688,522

Claims priority, application France, May 21, 1975, 75.16048; May 21, 1975, 75.16047; Dec. 30, 1975, 75.40390

Int. Cl.[2] C10G *13/02*

U.S. Cl. 208—59 **12 Claims**



1. A process for hydrocracking a petroleum hydrocarbon charge contaminated with nitrogenous compounds, in which said charge is treated in a first hydrocracking reaction zone at a temperature from about 300° to 550° C under a pressure from about 15 to 250 atmospheres, in the presence of hydrogen and of a catalyst containing at least one hydrogenating component selected from at least one metal of the groups VI B and VIII of the periodic table of the elements, in the form of the free metal or an oxide or sulfide thereof, said hydrogenating component being deposited on a solid carrier selected from a natural or a synthesis product, said process comprising the steps of feeding the effluent from the first hydrocracking reaction zone to a first separation zone whose pressure is the same as in the first hydrocracking reaction zone and whose temperature is from 200° to 300° C, separating in said separation zone (a), a vapor fraction containing, ammonia and the major part of the products converted in the first hydrocracking reaction zone and (b), a liquid effluent whose ammonia content is lower than about 50 parts by weight per million of parts of said effluent, adding to said effluent at least a portion of the liquid effluent from the bottom of a prefractionation zone as hereunder defined, feeding the resulting mixture of said liquid effluent of the first separation zone and said liquid effluent from the bottom of the prefractionation zone to a second hydrocracking reaction zone where it is heated in the presence of a catalyst containing at least one hydrogenating component selected from at least one metal of the groups VI B and VIII of the periodic table of the elements, in the form of the free metal or an oxide or sulfide thereof, said hydrogenating component being deposited on a solid carrier selected from a natural or a synthesis product, at a temperature from about 300° to 550° C under a pressure from about 15 to 250 atmospheres, admixing the new effluent obtained from the second hydrocracking reaction zone with the vapor fraction withdrawn from the first separation zone, feeding the resulting mixture of said effluent of said second hydrocracking reaction zone with said vapor fraction to a prefractionation zone operated under the same pressure as in the hydrocracking reaction zone from where said effluent has been withdrawn, separating in said prefractionation zone, by stripping with a gas as defined below, the liquid and gaseous phases of said effluent, so as to obtain, at the top of the prefractionation zone, a gaseous fraction containing mainly hydrogen and the major portion of the products converted in at least the hydrocracking reaction zone from where said effluent issues, and, at the bottom of the prefractionation zone, a fraction of heavy or uncoverted products, at least one part of which is recycled to at least the second hydrocracking reaction zone from where said effluent has been withdrawn, said gaseous fraction, withdrawn from the top of said prefractionation zone, being fed, after cooling, to a separation zone from wherein it is recovered, a gas of high hydrogen content and a new liquid effluent which is fed to a fractionation zone in order to separate the desired cuts as final products, in which process the gas used for the stripping step contains hydrogen, the said gas comprised of, at least partly, of the said gas of high hydrogen content obtained after cooling of the said gaseous fraction withdrawn from the top of the prefractionation zone of the said gas comprised of a mixture of fresh hydrogen with at least one portion of the said gas of high hydrogen content obtained after cooling of the said gaseous fraction withdrawn from the top of the prefractionation zone.

4,058,450

PROCESS FOR PRODUCING AROMATIC HYDROCARBONS OF HIGH PURITY

Jean-Francois Le Page; Bernard Juguin, both of Rueil Malmaison, and Jean Miquel, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 22, 1976, Ser. No. 669,335

Claims priority, application France, Mar. 24, 1975, 75.09391

Int. Cl.[2] C10G *35/04; C07C 3/58*

U.S. Cl. 208—66 **10 Claims**

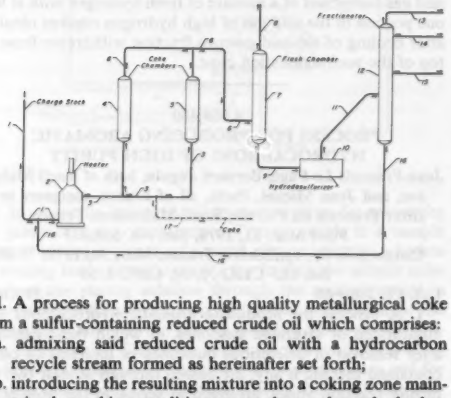
1. A process for producing aromatic hydrocarbons from unsaturated or saturated gasolines, in which these gasolines, after removal of deleterious quantities of diolefins or olefins contained therein, if any, are passed through at least two aromizing reaction zones, arranged in series, in the presence of hydrogen, said hydrogen, except when starting the reaction, being essentially recycled hydrogen, as defined below, and in

the presence of a catalyst containing a) alumina, b) 0.1 to 10% of at least one halogen, expressed by weight with respect to the alumina, and c) at least two metals or metal compounds, at least one of which is selected from the noble metals from the platinum family, the concentration of said metal being from 0.01 to 5% b.w. with respect to the alumina, at a temperature of about 400° to 600° C, the temperature of at least the last reaction zone through which the charge is passed being from 480° to 600° C, under a pressure substantially identical in each of the aromizing zones, said pressure being about 10 kg/cm², with an hourly flow rate by volume of the liquid charge from about 0.1 to 10 times the catalyst volume, the molar ratio hydrogen/hydrocarbon being about 0.5 to 20, in which process the effluent from the last reaction zone through which the charge is passed, is so treated as to remove therefrom a normally gaseous vapor fraction which is subjected to cooling at a temperature from −15 to +15° C, so as to recover a hydrogen stream called "recycled hydrogen" whose purity is higher than 70% by volume, at least a portion of said recycled hydrogen being fed to at least one of the aromizing reaction zones, in which process said effluent, after removal of the vapor fraction is subjected to fractionation at a pressure substantially equal to or lower than that prevailing in the aromizing reaction zones, so as to recover at least one aromatic cut as final product and at least one cut consisting essentially of at least one alkyl aromatic hydrocarbon, the latter cut being fed to at least one hydrodealkylation zone where said cut is treated in the presence of hydrogen, said hydrogen being exclusively at least a portion of the recycled hydrogen, in the presence of a catalyst which includes alumina 0.05 to 20% of cobalt by weight of the catalyst and 0.2 to 20% by weight of the catalyst of a metal selected in the group consisting of zinc, cadmium, gallium, indium, germanium, manganese, copper, silver, gold, niobium and zirconium, the catalyst having a specific surface from about 1 to 100 m²/g, a pore volume from about 0.2 to 1.0 cc/g and a neutralization heat by ammonia adsorption lower than 10 calories per gram of catalyst at 320° C under 300 mm Hg, the hydrodealkylation step being conducted at a temperature from 500° to 620° C, the spatial velocity being from 1 to 10, the ratio hydrogen/hydrocarbon expressed in mole by mole being from 1 to 10, the pressure being about 10 kg/cm².

4,058,451
COMBINATION PROCESS FOR PRODUCING HIGH QUALITY METALLURGICAL COKE

Frank Stolfa, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 23, 1976, Ser. No. 716,736
Int. Cl.² C10G *9/14, 37/06*
U.S. Cl. 208—97 **3 Claims**

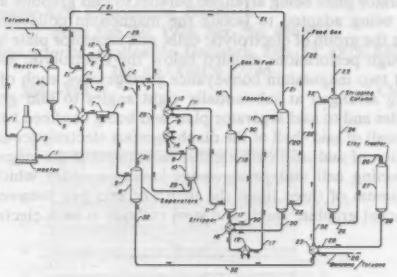


1. A process for producing high quality metallurgical coke from a sulfur-containing reduced crude oil which comprises:
   a. admixing said reduced crude oil with a hydrocarbon recycle stream formed as hereinafter set forth;
   b. introducing the resulting mixture into a coking zone maintained at coking conditions to produce coke and a hydrocarbon effluent having a reduced level of coke precursors;
   c. separating the coke from the hydrocarbon effluent and recovering the same;
   d. introducing the hydrocarbon effluent to a flash zone and therein vaporizing hydrocarbons boiling up to about 400° F.;
   e. hydrodesulfurizing the remainder of said effluent boiling above about 400° F.;
   f. fractionating the resultant desulfurized remainder of the hydrocarbon effluent to separate therefrom hydrocarbons boiling up to about 650° F., leaving a desulfurized hydrocarbon bottoms fraction boiling above about 650° F.; and
   g. supplying at least a portion of said desulfurized bottoms fraction boiling above about 650° F., to step (a) as said hydrocarbon recycle stream for admixture with the reduced crude oil therein.

4,058,452
ALKYLAROMATIC HYDROCARBON DEALKYLATION PROCESS

Robert S. Loboda, Hacienda Heights, Calif., assignor to UOP Inc., Des Plaines, Ill.

Filed July 19, 1976, Ser. No. 706,858
Int. Cl.² C10G *35/04*
U.S. Cl. 208—134 **7 Claims**



1. A hydrocarbon conversion process which comprises the steps of:
   a. passing a feed gas stream comprising hydrogen and C_2–C_4 paraffins through an absorption zone operated under conditions effective to remove C_2–C_4 paraffins, including countercurrent contact with a stripping zone liquid effluent stream, and thereby forming a hydrogenrich gas stream and an absorption zone liquid effluent stream;
   b. passing the absorption zone liquid effluent stream into a stripping zone operated at conditions effective to cause the removal of C_2–C_4 paraffins from absorption zone liquid effluent stream, including countercurrent contact with a gaseous stripping media, and thereby forming the stripping zone liquid effluent stream and an off-gas stream comprising hydrogen and C_2–C_4 paraffins;
   c. admixing the hydrogen-rich gas stream with a hydrocarbon feed stream to form a reaction zone feed stream;
   d. passing the reaction zone feed stream through a reaction zone as a vapor and thereby forming a reaction zone effluent stream;
   e. cooling and effecting a partial condensation of the reaction zone effluent stream and passing the reaction zone effluent stream into a first vapor-liquid separation zone operated at conditions effective to form a first condensate stream and a first separation zone gas stream;
   f. passing the first condensate stream into a product recovery zone;
   g. cooling and then passing the first separation zone gas stream into a second vapor-liquid separation zone operated at conditions effective to form a second condensate stream and a second separation zone gas stream; and,
   h. heating the second separation zone gas stream by indirect heat exchange against the first separation zone gas stream

and passing the second separation zone gas stream into a lower portion of the stripping zone as the gaseous stripping media.

2. The process of claim 1 further characterized in that the hydrocarbon feed stream comprises toluene.

7. A process for catalytically reforming a naphtha which comprises the steps of:

a. passing a feed gas stream comprising hydrogen and C_2–C_4 paraffins through an absorption zone operated under conditions effective to remove C_2–C_4 paraffins, including countercurrent contact with a stripping zone liquid effluent stream, and thereby forming a hydrogenrich gas stream and an absorption zone liquid effluent stream;

b. passing the absorption zone liquid effluent stream into a stripping zone operated at conditions effective to cause the removal of C_2–C_4 paraffins from absorption zone liquid effluent stream, including countercurrent contact with a gaseous stripping media, and thereby forming the stripping zone liquid effluent stream and an off-gas stream comprising hydrogen and C_2–C_4 paraffins;

c. admixing the hydrogen-rich gas stream with a naphtha feed stream to form a reaction zone feed stream;

d. passing the reaction zone feed stream through a reaction zone as a vapor and thereby forming a reaction zone effluent stream;

e. cooling and effecting a partial condensation of the reaction zone effluent stream and passing the reaction zone effluent stream into a first vapor-liquid separation zone operated at conditions effective to form a first condensate stream and a first separation zone gas stream;

f. passing the first condensate stream into a product recovery zone;

g. cooling and then passing the first separation zone gas stream into a second vapor-liquid separation zone operated at conditions effective to form a second condensate stream and a second separation zone gas stream; and,

h. heating the second separation zone gas stream by indirect heat exchange against the first separation zone gas stream and passing the second separation zone gas stream into a lower portion of the stripping zone as the gaseous stripping media.

4,058,453
DEMULSIFICATION OF OIL EMULSIONS WITH A MIXTURE OF POLYMERS AND ALKALINE EARTH METAL HALIDE

Mahendra S. Patel, and Aleksy Sacuta, both of Edmonton, Canada, assignors to Texaco Exploration Canada Ltd., Calgary, Canada

Filed Aug. 11, 1976, Ser. No. 713,456
Int. Cl.² C10G *33/04*
U.S. Cl. 208—188 **9 Claims**

1. A process for recovering oil from oil-in-water and water-in-oil emulsions wherein said emulsions contain clay tending to stabilize said emulsions, said process comprising in combination demulsifying said emulsions by adding thereto from 10 to 60 parts per million of non-ionic, water-soluble, polyethylene oxide polymers having a molecular weight in the range of 100,000 to 7,000,000, together with 100 to 20,000 parts per million of an alkaline earth metal halide in an aqueous solution and separating said oil from said water and said clay.

4,058,454
AROMATIC HYDROCARBON SEPARATION VIA SOLVENT EXTRACTION

George F. Asselin, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 22, 1976, Ser. No. 679,272
Int. Cl.² C10G *21/28*
U.S. Cl. 208—321 **8 Claims**

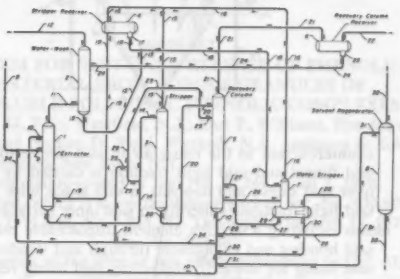
1. A process for the recovery of aromatic hydrocarbons from a mixture thereof with non-aromatic hydrocarbons, which process comprises the steps of:

a. introducing said aromatic/non-aromatic mixture into an extraction zone, and therein contacting said mixture with a solvent having water dissolved therein characteristically selected for absorbing aromatic hydrocarbons, at conditions selected to maintain said mixture and solvent in liquid phase;

b. removing a non-aromatic hydrocarbon raffinate stream fron said zone, through an upper locus thereof;

c. removing an aromatic hydrocarbon, solvent-rich extract stream from said zone, through a lower locus thereof, and introducing said extract stream into a stripper column;

d. removing a non-aromatic hydrocarbon concentrate from said stripper column, through an upper locus thereof, and removing an aromatic hydrocarbon-containing first solvent-rich stream from said stripper column, through a lower locus thereof;



e. introducing said first solvent-rich stream into a solvent recovery column, through a first locus thereof, introducing a vaporous steam stripping medium into a lower, second locus thereof, recovering a substantially solvent-free aromatic hydrocarbon concentrate through an upper third locus thereof, removing a substantially hydrocarbon-free, second solvent-rich stream from a lower fourth locus thereof and removing a third solvent-rich stream, containing hydrocarbons, through an intermediate fifth locus thereof;

f. introducing at least a portion of said third solvent-rich stream into said stripper column; and,

g. commingling a portion of only said third solvent-rich stream with said aromatic-non-aromatic mixture for introduction therewith into said extraction zone.

4,058,455
ROTARY SEPARATOR

Josef Schier, Bergkamen-Oberaden, Germany, assignor to Ruhrkohle AG, Essen, Germany

Filed Feb. 17, 1976, Ser. No. 658,602
Claims priority, application Germany, Feb. 19, 1975, 2507145
Int. Cl.² B07B *7/10*
U.S. Cl. 209—139 R **9 Claims**

1. A rotary separator comprising:

a generally closed housing defining a separation chamber having an upper compartment and a lower compartment, said housing being formed around said upper compartment with a plurality of throughgoing windows;

a lining of flexible sheet material secured in said housing over said windows and substantially blocking gas flow into said compartments through said windows, said lining substantially completely laterally covering said housing in said upper compartment and having an inner surface directly exposed in said upper compartment;

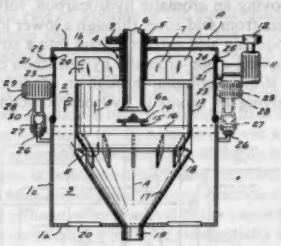
a fan in said upper compartment;

an annular sleeve in said upper compartment below said fan and defining with said inner surface at said windows an annular passage;

a discharge funnel in said lower compartment said below said sleeve and defining with said housing an annular space open to said passage;

means for introducing into said upper compartment below said fan and inside said sleeve particulate material having a heavy fraction and a light fraction;

means for rotating said fan and circulating air in said chamber in a closed path rising inside said sleeve and descending in said passage, whereby said heavy fraction drops



countercurrent to the rising air in said sleeve to land in said funnel and said light fraction is carried by said air over said sleeve and deposits in said space with some of said light fractions adhering to said inner surface; and

means including a striking element displaceable relative to said housing and engageable through said windows with said lining for inwardly deflecting said lining relative to said housing by engagement with said lining through said windows for flexing said lining and loosening particulate material caked on said inner surface of said lining.

4,058,456

EXTERNAL SUPPORTED FILTER

Brian Arthur Head, Maidstone, England, assignor to Whatman Reeve Angel Limited, Maidstonet, England

Filed Jan. 21, 1977, Ser. No. 761,027

Claims priority, application United Kingdom, Dec. 24, 1976, 54165/76

Int. Cl.[2] B01D *37/00;* **C02B** *3/00;* **C02C** *3/00;* **B07B** *9/00*

U.S. Cl. 210—23 R **27 Claims**

1. A method of manufacturing an inside-to-outside flow filter tube of improved burst strength, which method comprises:

a. forming a wet mat of a desired and generally uniform-depth, randomly disposed, nonwoven, inorganic fibers having interstices therebetween, and having a diameter of from about 0.001 to 10 microns, onto the external surface of a cylindrical, porous, vacuum mandrel to form a porous filter tube;

b. positioning an external, reinforcement, porous, sleeve material, having a selected internal diameter slightly in excess of the external diameter of the wet mat of fibers of the filter tube, about the filter tube and into a concentric arrangement with the filter tube;

c. applying an outwardly directed force to the fibers of the filter tube such that the external diameter of the filter tube expands into intimate contact with the concentric sleeve material;

d. drying the filter tube so formed; and

e. bonding the filter tube and external sleeve material with a bonding agent into an integral filter tube.

4,058,457

RECOVERY OF ACTIVATED CARBON

Milton Manes, 1613 Chadwick Drive, Kent, Ohio 44240

Filed Dec. 1, 1976, Ser. No. 746,624

Int. Cl.[2] B01D *15/06*

U.S. Cl. 210—32 **17 Claims**

1. A process of recovering or regenerating activated carbon which is at least partially loaded with an organic chemical adsorbed thereon comprising passing a solution of iodine in an aqueous or organic solvent through the carbon to displace the organic chemical by iodine.

11. A process of purifying water comprising passing the water through activated carbon until the carbon is at least partially loaded with adsorbed organic chemicals and then recovering the activated carbon in the manner set forth in claim 1.

4,058,458

REMOVAL OF COLOR FROM PAPER MILL WASTE WATERS

Jerry J. Svarz, La Grange, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 5, 1975, Ser. No. 637,976

Int. Cl.[2] C02C *1/40*

U.S. Cl. 210—52 **10 Claims**

1. A process for removing color from cellulose paper pulp waste water wherein color bodies are present due to chemical reaction on or degradation of lignin which consists essentially of adjusting the pH of said waste water to a pH within the range of 2 to 5 and mixing with the resultant waste water a compound from the group consisting of alkylated and acylated amines, quaternized forms of such alkylated and acylated amines, and mixtures thereof, said compound containing at least 4 carbon atoms in a hydrocarbon group linked directly to nitrogen or linked to nitrogen through a carbonyl group and being effective to combine with said color bodies to form solids which can be separated from said waste water, the amount of said compound being within the range of 20 ppm to 2000 ppm of said waste water, and separating the resultant solids.

4,058,459

LIQUID FILTER APPARATUS

John W. Griffin, 310 N. Neel Place, Kennewick, Wash. 99336

Continuation-in-part of Ser. No. 398,948, Sept. 20, 1973, abandoned. This application Apr. 10, 1975, Ser. No. 566,930

Int. Cl.[2] B01D *27/10*

U.S. Cl. 210—132 **12 Claims**

1. Filter apparatus for filtering water and particulate matter from a liquid, comprising, in combination:

first filter means including a layer comprising a plurality of stratified discrete flat strips randomly oriented in planar layers, with the flat portion of adjacent strips generally parallel and disposed against each other, for filtering particulate matter from the liquid,

second filter means including desiccant means for filtering water from the fluid; and

housing means for the first and second filter means.

8. Filter apparatus for filtering particulate matter and water from a liquid, comprising, in combination:

cylinder housing means including means for admitting a flow of liquid into the cylinder housing means;

first inner cylinder means including first filter means for filtering a portion of the flow of liquid;

second inner cylinder means including second filter means for filtering another portion of the flow of liquid, said second inner cylinder means including an impervious housing having a plurality of apertures communicating with a portion of the second filter means disposed within said housing, and said second filter means including a filter layer comprising a plurality of layers of discrete generally flat stratified elements oriented randomly with adjacent elements disposed against each other, and a layer of desiccant means, through which layers the other portion of the liquid sequentially flows;

first conduit means connected to the cylinder housing means and to the first inner cylinder means for providing a flow of liquid out of the inner cylinder means; and

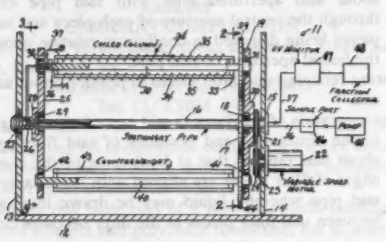
second conduit means connected to and extending between the first conduit means and the second inner cylinder means for providing a flow of liquid from the second inner cylinder means.

4,058,460

HORIZONTAL FLOW-THROUGH COIL PLANET CENTRIFUGE WITHOUT ROTATING SEALS

Yoichiro Ito, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Mar. 17, 1977, Ser. No. 778,455
Int. Cl.² B01D *15/08*
U.S. Cl. 210—198 C **10 Claims**



1. In an apparatus for continuous countercurrent chromatography, a support, helical separation column means horizontally and rotatably mounted on the support, inlet and outlet flow tubes connected to said column means, fixed, elongated tube guide means on the support extending horizontally substantially parallel to and spaced from said column means and receiving said flow tubes at one end and defining a protective housing for the flow tubes, and means to simultaneously rotate said column means around its rotational axis and revolve said column means around the tube guide means at relative rates avoiding twisting of the flow tubes, whereby to simultaneously develop both gravitational force reversals and centrifugal forces in said column means.

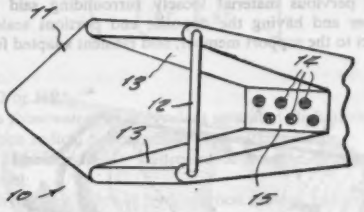
4,058,461

OIL SALVAGE SHIP WITH OCEAN GOING BOW

Thomas I. Gaw, 12 Fuller Place, Brooklyn, N.Y. 11215

Filed Oct. 5, 1976, Ser. No. 729,652
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 S **3 Claims**

1. An oil salvage ship, comprising in combination, a hull having a doorway at its bow closable by a pair of doors, a rearwardly converging vestibule behind said doorway forming a scoop as part of said ship and having a rear vertical plate, a plurality of selectively openable grid-screened ports at different elevations through said plate, said ports communicating with an oil collection system on said ship; whereby as the draft of the ship varies, at least one port will be at the water surface to admit surface oil.

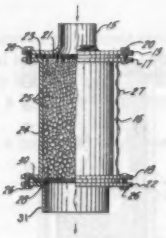


4,058,462

SYSTEM FOR SUSTAINED RELEASE OF PHENOLIC MATERIAL FROM POROUS GRANULES OF INSOLUBLE POLYMERIC PHENOLIC COMPLEXES

Marvin M. Fein, Westfield, N.J.; Earl P. Williams, Pen Argyl, Pa., and Nathan D. Field, Wyckoff, N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 25,249, April 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 436,609, Jan. 25, 1974, Pat. No. 3,914,187. This application Oct. 17, 1975, Ser. No. 623,382
The portion of the term of this patent subsequent to Oct. 21, 1992, has been disclaimed.
Int. Cl.² B01D *25/06*
U.S. Cl. 210—289 **10 Claims**



1. A sustained phenolic releasing system which comprises a container containing porous granules or beads comprising a complexed compound of a phenolic material with a water-insoluble, but water swellable crosslinked polymer of a N-vinyllactam or an N-alkyl-N-vinylamide and provided with means permitting continuous flow of a fluid in which said phenolic material is soluble or readily dispersable into said container, contact with said granules or beads contained therein for a time sufficient for said fluid to leach a desired amount of the phenolic material from the porous granules and exit from said container.

4,058,463

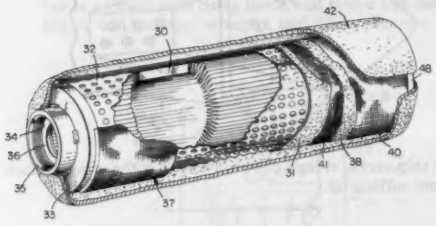
ELEMENT FOR FILTERING AND SEPARATING FLUID MIXTURES

Ivan Bartik, Cookeville, Tenn., assignor to Keene Corporation, New York, N.Y.

Filed Sept. 3, 1974, Ser. No. 502,648
Int. Cl.² B01D *29/14*
U.S. Cl. 210—317 **10 Claims**

1. In an element for removing particulate material from water and for coalescing oil in the water into droplets of substantial size; a cylindrical pleated inner member, a perforated cylindrical support member surrounding said pleated member

in supporting relation thereto, end caps sealed to opposite ends of the assembly of said pleated member and support member, a fluid inlet in one of said end caps, and a separator element of liquid pervious material loosely surrounding said support member and having the opposite end portions sealed with respect to the support member, said element adapted for being



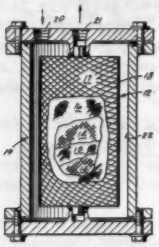
disposed in a vertical position in a pressure vessel having means for connection to said fluid inlet, said separator element retarding the flow of oil droplets therethrough while freely passing the water droplets whereby the oil droplets migrate upwardly in the separator element and merge into larger droplets and emerge through an upper region of the separator element.

4,058,464

HELICALLY WOUND EXPANDABLE FILTER

Robert N. Rogers, Carpentersville, Ill., assignor to John R. Coffey and Vincent B. Conliff, deceased, part interest to each

Filed Sept. 15, 1976, Ser. No. 723,311
Int. Cl.[2] B01D *29/06*
U.S. Cl. 210—356 **8 Claims**



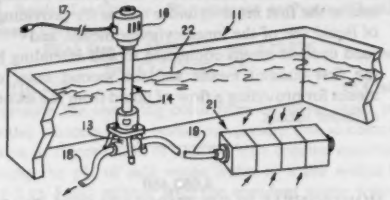
1. An expandable filter for fluids, comprising:
a. a rigid core having at least one filtrate passage therein, said core having at least one slot in an external wall thereof in fluid communication with said passage;
b. at least one elongated tubular porous filter medium of generally flat transverse cross-section having a closed end and an open end, said open end being secured to said core at said slot in fluid communication with said passage, said filter medium extending helically about said core and the outside of said filter medium being adapted to be exposed to the unfiltered fluid;
c. an elongated helical grid disposed within said filter medium and extending substantially between said ends, said grid being resiliently compressible in a radial direction in response to fluid pressure increase on the outside of said filter medium;
d. at least one elongated scrubber screen fixedly secured at one end to said core and extending helically thereabout between successive turns of said filter medium, and against which said filter medium is urged by a force from said resilient grid in response to fluid pressure decrease; and
e. resilient means enclosing the outermost diametrical surfaces of said grid and screen, and being radially outwardly yieldable in response to said force from said resilient grid acting through a build-up of contaminant on said scrubber screen, whereby said filter expands diametrically in increments as contaminant builds up.

4,058,465

FILTER FOR FISH POND

Paul McKee, Grass Valley, Calif., assignor to Lois Enebrad, Stockton, Calif.

Filed Oct. 14, 1976, Ser. No. 732,357
Int. Cl.[2] B01D *25/00*
U.S. Cl. 210—356 **3 Claims**



1. An improved filtering device comprising
a laterally apertured pipe having one end thereof closed and the other end thereof adapted for connection to the inlet of a suction pump,
a plurality of filter pieces of centrally apertured dimensionally stable and resiliently flexible porous material disposed about said apertured pipe with said pipe extending through the central aperture of each piece and said filter pieces being disposed in contiguous relation about all of the lateral apertures of said pipe,
means retaining said filter pieces in position about said pipe, and
the separation of apertures in said central pipe being related to the dimensions and positions of said filtering pieces about said pipe so that at least some of the contiguous edges of filter pieces are aligned with lateral apertures in said pipe whereby liquid may be drawn into said pipe between said filter pieces as the filter becomes clogged.

4,058,466

BROMINATED CARBAMOYL DERIVATIVES

Daniel J. Scharf, East Amherst, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,526
Int. Cl.[2] C09K *3/28*; C07C *125/04, 125/06*
U.S. Cl. 252—8.1 **18 Claims**

1. Brominated carbamoyl derivatives of the structure:

$$R_2N-C(O)-O-(R^1)_n-CH_2-C(X)_2-CH_2-(R^1)_n-O-C(O)NR_2$$

wherein:
R is independently selected from the group consisting of hydrogen, alkyl, alkanol, cycloalkyl from 5 to 7 carbon atoms, phenyl, alkyl substituted by phenyl, phenyl substituted by alkyl, hydroxy terminated oxyalkylene, hydroxy substituted hydroxy terminated oxyalkylene and halogen substituted hydroxy terminated oxyalkylene;
R^1 is independently selected from the group consisting of alkylene; oxyalkylene; hydroxy substituted oxyalkylene, halogen substituted oxyalkylene and alkylene or oxyalkylene substituted by the group $-O-C(O)NR_2$;
X is selected from the group consisting of halogen and halogen substituted alkyl, wherein the halogen is chlorine or bromine; said alkyl, alkanol and alkylene each independently has from 1 to 4 carbon atoms; said oxyalkylene having from 2 to 4 carbon atoms; n is 0 to 20;

provided one of X is a bromo or a bromo substituted alkyl; and that each carbamoyl group has a replaceable hydrogen in the R group.

14. A method of imparting a flame retarding property to a combustible material comprising treating the combustible material by impregnating with an effective flame retarding imparting amount of the composition of claim 1.

4,058,467

SULFONATE WATER FLOOD ADDITIVES AND METHOD OF USING SAME

Roy C. Sias, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 28, 1976, Ser. No. 700,695
Int. Cl.[2] E21B *43/22*
U.S. Cl. 252—8.55 D **4 Claims**

1. In a method for recovering hydrocarbons from a petroliferous formation which comprises injecting an aqueous fluid into the formation through an injection well and recovering displaced hydrocarbons from the formation through a recovery well; the improvement comprising injecting through the injection well an effective amount of aqueous mixture which contains from about 0.5 to about 25 weight percent of a carbon dioxide saturated alkali metal hydrocarbon sulfonate waterflood additive; the hydrocarbon sulfonate waterflood additive having an average equivalent weight of from about 300 to about 600.

4,058,468

LUBRICANT COMPOSITION

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed June 7, 1976, Ser. No. 693,473
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—46.7 **22 Claims**

1. A lubricating oil composition comprising a major amount of lubricating oil and a minor amount, sufficient to improve dispersancy, of an additive made by:

A. reacting one mole part of a poly C_{2-4} olefin substituted phenol wherein said polyolefin substituent has an average molecular weight of from about 650 to 5000 with from about 1–10 mole parts of a C_{1-4} aldehyde and from about 0.1–10 mole parts of a nitrogen compound, said nitrogen compound being selected from the group consisting of ammonia and amines containing at least one HN< group and containing from 1 to about 20 carbon atoms at reaction temperature to form a Mannich condensation product,

B. reacting said condensation product with about 0.1–50 mole parts of an alkylene oxide containing from 2 to about 6 carbon atoms to form an alkoxylated product, and

C. reacting said alkoxylated product with about 0.05 to 1 mole part of P_2S_5 at reaction temperature to form said additive.

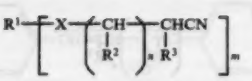
4,058,469

LUBRICANTS AND FUNCTIONAL FLUIDS CONTAINING POLYFUNCTIONAL NITRILES

Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Filed Dec. 5, 1975, Ser. No. 637,920
Int. Cl.[2] C10M *1/32*
U.S. Cl. 252—51.5 R **30 Claims**

1. A composition comprising an oleaginous liquid of lubricating viscosity and about 0.001–20.0 parts by weight, per 100 parts of said oleaginous liquid, of at least one polyfunctional nitrile of the formula



wherein:

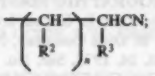
X is O or NR^4;

R^1 is a monovalent or polyvalent saturated aliphatic hydrocarbon radical having about 4–25 carbon atoms;

each R^2 is individually hydrogen or a lower hydrocarbon radical;

R^3 is hydrogen, a lower hydrocarbon radical, halogen, CN or $COOR^5$;

R^4 is hydrogen, a hydrocarbon radical or

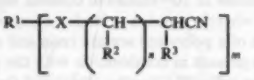


R^5 is hydrogen or a lower alkyl radical;

m is the valence of R^1; and

n is an integer from 0 to 2.

10. An additive concentrate comprising an oleaginous liquid of lubricating viscosity and up to about 90% by weight of at least one polyfunctional nitrile of the formula



wherein:

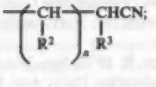
X is O or NR^4;

R^1 is a monovalent or polyvalent saturated aliphatic hydrocarbon radical having about 4–25 carbon atoms;

R^2 is individually hydrogen or a lower hydrocarbon radical;

R^3 is hydrogen, a lower hydrocarbon radical, halogen, CN or $COOR^5$;

R^4 is hydrogen, a hydrocarbon radical or



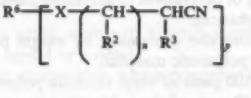
R^5 is hydrogen or a lower alkyl radical;

m is the valence of R^1; and

n is an integer from 0 to 2;

the amount of said polyfunctional nitrile in said concentrate being sufficient to afford, when said concentrate is further diluted with an oleaginous liquid of lubricating viscosity, a composition according to claim 1.

20. A method of causing swelling of seals in machinery which comprises contacting said seals with a polyfunctional nitrile of the formula



wherein:

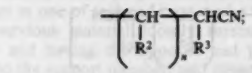
X is O or NR^4;

R^6 is a monovalent or polyvalent hydrocarbon radical having about 4–25 carbon atoms;

R^2 is hydrogen or a lower hydrocarbon radical;

R^3 is hydrogen, a lower hydrocarbon radical, halogen, CN or $COOR^5$;

R^4 is hydrogen, a hydrocarbon radical or



R^5 is hydrogen or a lower alkyl radical;
n is an integer from 0 to 2; and
p is the valence of R^6.

4,058,470

LIQUID DEVELOPER COMPOSITION FOR LITHOGRAPHIC MASTERS

Elia P. Moschovis, and John L. Gilson, both of Morton Grove, Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed Oct. 24, 1975, Ser. No. 625,753
Int. Cl.² G03G *9/12*
U.S. Cl. 252—62.1 L **9 Claims**

1. A liquid developer composition for treatment to convert a latent electrostatic image to one that is ink receptive, water repellent and hydrophobic for use in the production of multiple copies by lithographic techique, the improvement which, in addition to the ink receptive, water repellent, oleophilic toner particles and a liquid aliphatic organic solvent having a resistivity in excess of 10^{10} ohms-cm consists essentially of the improvement wherein a resinous binder component is present which consists of a polyvinyl acetate resin and a hydrophobic colloidal silica present in combination with the polyvinyl acetate resin in the ratio of 1 part by weight of the hydrophobic colloidal silica to 1.5 to 4 parts by weight of the polyvinyl acetate.

4,058,471

PLASTICIZED POLYMERIC COMPOSITIONS BASED ON VINYL CHLORIDE POLYMERS

Flaviano Glatti, Mestre (Venice), and Gastone Siongo, Mogliano Veneto (Treviso), both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Apr. 8, 1975, Ser. No. 566,630
Claims priority, application Italy, Apr. 9, 1974, 21065/74
Int. Cl.³ H01B *3/10, 3/44*
U.S. Cl. 252—63.5 **9 Claims**

1. Plasticized vinyl chloride polymeric compositions having good physical-mechanical properties and being particularly useful as sheathings for electric cables, even at high temperatures, and containing by weight, per 100 parts by weight of the polymeric material, as essential constituents,

from 0.05 to 3.0 parts of silica having an average particle size below 0.01 micron and a surface area larger than 200 m^2/g; and from 0.0005 to 1.0 part of a phenol type antioxidant for vinyl chloride polymers selected from the group consisting of derivatives of alkylated phenols, bis-phenols and polyphenols;

said compositions also containing, by weight per 100 parts by weight of the polymeric material,

from 20 to 100 parts of vinyl chloride polymer plasticizers;
from 0.1 to 10 parts of vinyl chloride polymer heat and light stabilizers;
0 to 10 parts of vinyl chloride polymer costabilizers;
from 0 to 1.0 part of vinyl chloride polymer ultraviolet rays absorbers and/or optical blueing agents;
from 0 to 4.0 parts of vinyl chloride polymer lubricants;
from 0 to 10 parts of TiO_2 and/or carbon black; and from 0 to 100 parts of vinyl chloride polymer mineral fillers.

4,058,472

DETERGENT COMPOSITION

Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed June 28, 1976, Ser. No. 700,623
Int. Cl.² C11D *3/395*
U.S. Cl. 252—89 B **4 Claims**

1. A detergent composition containing as the surface active component from about 0.01 to about 10% by weight of the alkali metal or ammonium salts of a sulfonated C_{14}–C_{18} alkyl catechol admixture, said catechol being present in the admixture in a weight ratio of from about 50 to 70 parts of the mono (C_{14}–C_{18}) alkyl catechol and from about 50 to 30 parts of the di (C_{14}–C_{18}) alkyl catechol, from about 40 to about 80–90% of an inorganic builder material, from 0 to 20% of an organic builder material, and from about 0.5 to about 5% of a special purpose component, said special purpose component being at least one member selected from the group consisting of a solubilizing agent, a bleaching agent and a brightener.

4,058,473

LOW TEMPERATURE STABLE COMPOSITIONS

Carl Robert Canter, Bloomfield, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed June 24, 1976, Ser. No. 699,727
Int. Cl.² C11D *9/32*
U.S. Cl. 252—121 **1 Claim**

1. A low temperature, stable detergent composition consisting of:

	Percent by Weight
Potassium tallowate	about 8% to about 12%
C_{11-15} ethoxylated secondary alcohol having about 9 moles of ethylene oxide per mole of alcohol	about 8% to about 12%
C_{11-15} ethoxylated secondary alcohol having about 3 moles of ethylene oxide per mole of alcohol	about 2% to about 4%
Sodium xylene sulfonate	about 1% to about 3%
Sodium toluene sulfonate	0% to about .6%
Glycerine	about 0% to about 1.5%
EDTA	about 0% to about 0.1%
KOH	about 0% to about 0.5%
Adjuvants	0% to about 0.36%
Water	at least 63.93% by weight of the composition up to 100% of the balance by weight.

4,058,474

DRAIN CLEANING COMPOSITION

George B. Keyes, Cincinnati, Ohio, and Justin J. Murtaugh, Guilford, Ind., assignors to The Drackett Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 477,891, June 10, 1974, abandoned. This application Nov. 10, 1975, Ser. No. 630,840
Int. Cl.² C11D *7/06, 7/12*
U.S. Cl. 252—160 **6 Claims**

1. A pelletized drain cleaning composition wherein each pellet of said composition consists essentially of:

1. 1.5 to 12 weight percent aluminum;
2. 15 to 51 weight percent of an alkali metal nitrate selected from the group consisting of potassium nitrate, sodium nitrate and mixtures thereof;
3. 0.5 to 10 weight percent of a binding material having a melting point of from about 37° C. to about 67° C. selected from the group consisting of polymers of polyethylene glycol, having a molecular weight of from about 3000 to about 20,000; polymers of ethylene oxide, having a molecular weight of from about 400,000 to about 2,000,000; hydrocarbon oxyethylated straight chain fatty alcohols, having a molecular weight of about 260 to about 265 and

containing about 80%, by weight, ethylene oxide; fatty acids, having a carbon chain length of from about 10 to about 18 carbon atoms; alkali metal salts of gluconic acid selected from the group consisting of sodium gluconate, potassium gluconate and sodium glucoheptonate; and mixtures thereof;

4. 1 to 10 percent of an alkali metal hydroxide;

5. 10 to 60 weight percent of an additional compatible alkaline ingredient selected from the group consisting of alkali metal borates, alkali metal silicates, alkali metal bicarbonates, alkali metal carbonates, alkali metal phosphates and mixtures thereof, whereby the total alkaline concentration present, expressed as sodium oxide, is at least about 11%, by weight; wherein

said alkali metal borates are alkali metal meta-, tetraborates, or hydrates thereof;

said alkali metal silicates are alkali metal meta-, ortho-silicates, or hydrates thereof having the formula $x(SiO_2)(M_2O)$, where x varies from 0.5 to 3.75 and M is an alkali metal; and

said alkali metal phosphates are alkali metal monobasic-, dibasic-, tribasic-, meta-, pyrophosphates, or hydrates thereof;

6. up to about 10 weight percent of an oil selected from the group consisting of mineral oils having a viscosity range of about 34 to 360 Saybolt Universal Seconds at 100° F; silicone oils selected from the group consisting of dimethylpolysiloxanes having flash points of not less than about 500° F and having a viscosity range of about 40 to 60 centistokes at 25° C; vegetable oils having a viscosity range of about 40 to 60 centipoises at 25° C; petroleum lubricating oils having a viscosity range of about 100 to 500 centipoises at 25° C; and mixtures thereof; wherein the amount of oil present is sufficient to coat the aluminum; and

7. a salt selected from the group consisting of potassium chloride, sodium chloride and mixtures thereof and said salt is present in an amount up to about 48%, by weight; wherein said composition is prepared by the method consisting essentially of:

a. reducing the particle size of all of the ingredients to a size between 40 and 710 microns;

b. coating the aluminum particles with the oil; and draining off the excess oil

c. adding the excess oil, the alkali metal nitrate, alkaline ingredient, the binder material, and the salt, if any, to the coated aluminum particles of (b) and mixing the ingredients;

d. adding the alkali metal hydroxide particles to the resulting mixture of (c) and mixing the ingredients;

e. pelletizing the resulting mixture of (d) at a temperature just above the melting point of the binding material; and

f. cooling the resulting pellets obtained from

e. said pellets having a size such that they pass through the openings of a U.S. sieve screen having a mesh size of 8 and are retained on a U.S. sieve screen having a mesh size of 20.

4,058,475

LIQUID CRYSTAL COMPOSITIONS CONTAINING CYANOCINNAMIC ACID ESTERS

Toshio Jinnai; Goro Matusmoto, and Kazuhito Iwasaki, all of Odawara, Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

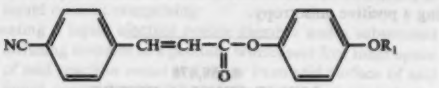
Filed June 3, 1976, Ser. No. 692,561

Claims priority, application Japan, June 5, 1975, 50-68022; June 12, 1975, 50-71278; Aug. 18, 1975, 50-100001; Feb. 12, 1976, 51-14323

Int. Cl.[2] C07C *121/75;* C09K *3/34*

U.S. Cl. 252—299 **6 Claims**

1. A nematic liquid crystal composition comprising at least two cinnamic acid esters of the formula



wherein R_1 is straight-chain alkyl of 4 to 8 carbon atoms.

4,058,476

LIQUID CRYSTALLINE ISONITRILES

Arthur Boller, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

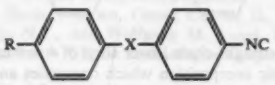
Division of Ser. No. 444,923, Feb. 22, 1974, Pat. No. 3,925,444. This application Aug. 18, 1975, Ser. No. 605,788

Claims priority, application Switzerland, Mar. 2, 1973, 3099/73

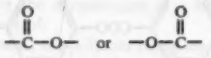
Int. Cl.[2] C09K *3/34;* G02F *1/13*

U.S. Cl. 252—299 **6 Claims**

2. A nematic composition which comprises a compound of the formula



wherein X is



and R is straight-chain alkyl of 1–7 carbon atoms, straight-chain alkoxy of 1–7 carbon atoms, straight-chain alkanoyloxy of 1–7 carbon atoms or p-alkyloxycarbonyloxy wherein the alkyloxy group is straight-chain alkyloxy of 1–7 carbon atoms,

or mixtures thereof and one or more nematic compounds having a positive anisotropy.

4,058,477

LIQUID CRYSTAL SCHIFFS BASES

Arthur Boller, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

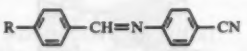
Division of Ser. No. 334,292, Feb. 21, 1973, Pat. No. 3,927,064. This application Sept. 8, 1975, Ser. No. 611,096

Claims priority, application Switzerland, Feb. 23, 1972, 2585/72; Jan. 11, 1973, 355/73

Int. Cl.[2] C09K *3/34;* C02F *1/13*

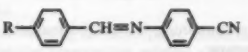
U.S. Cl. 252—299 **22 Claims**

1. A nematic composition which comprises two or more compounds of the formula



wherein R is ethyl, n-propyl, n-butyl, n-pentyl, isohexyl, n-hexyl, n-heptyl or n-octyl.

15. A nematic composition which comprises a Schiffs' base of the formula



wherein R is ethyl, n-propyl, n-butyl, n-pentyl, n-hexyl, isohexyl, n-heptyl or n-octyl,

or mixtures thereof and one or more nematic compounds having a positive anisotropy.

4,058,478

LIQUID CRYSTAL ESTERS

Arthur Boller, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 334,291, Feb. 21, 1973, Pat. No. 3,923,857. This application Aug. 20, 1975, Ser. No. 606,156

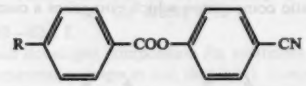
Claims priority, application Switzerland, Feb. 23, 1972, 2586/72; Jan. 23, 1973, 920/73

The portion of the term of this patent subsequent to Sept. 21, 1993, has been disclaimed.

Int. Cl.² C09K *3/34*; G02F *1/13*

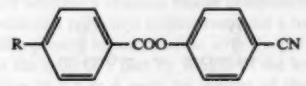
U.S. Cl. 252—299 **10 Claims**

1. A nematic composition which comprises two or more compounds of the formula



wherein R is straight-chain lower alkyl of 4 to 8 carbon atoms.

7. A nematic composition which comprises an ester of the formula



wherein R is straight-chain lower alkyl of 4 to 8 carbon atoms,

or mixtures thereof and one or more nematic compounds having a positive anisotropy.

4,058,479

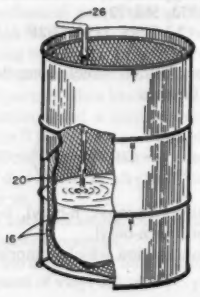
FILTER-LINED CONTAINER FOR HAZARDOUS SOLIDS

Leslie E. White, Folsom, and Charles M. Gracey, Carmichael, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed May 12, 1975, Ser. No. 576,679

Int. Cl.² G21F *9/36*

U.S. Cl. 252—301.1 W **10 Claims**



1. A package containing toxic solid material comprising:

outer wall means;

a layer of a material that is impervious to the solid toxic material but porous to a liquified immobilization material spaced at a predetermined distance from said wall means and substantially encompassing a preselected area within the package;

solid toxic material confined within said encompassed area by said impervious material; and

a liquefiable immobilization material that will penetrate said layer when liquefied disposed both within said encompassed area in mixture with said solid toxic material, and also between said layer and said wall means to isolate said layer and said toxic material from said wall means.

4,058,480

NON-DUSTING, READILY FREE-FLOWING GRANULES OF OPTICAL BRIGHTENERS

Frank Lohmann, Arlesheim; Raymond Lugrin, Basel, both of Sweden, and Hanspeter Baumann, Toms River, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 12, 1974, Ser. No. 505,282

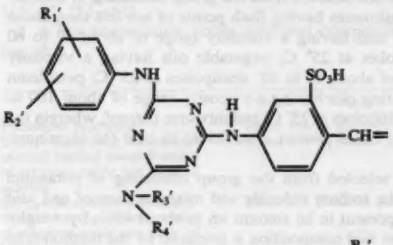
Claims priority, application Switzerland, Sept. 14, 1973, 13275/73

Int. Cl.² D06L *3/12*; C09K *11/00*

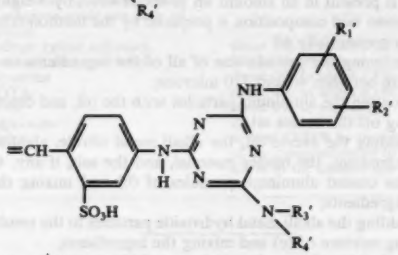
U.S. Cl. 252—301.21 **11 Claims**

1. Non-dusting, readily free-flowing, easily soluble granules, consisting of a mixture of

a. 5 to 70 percent by weight of an optical brightener selected from the group consisting of compounds of the formulae

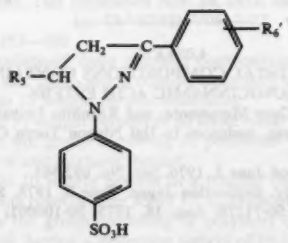


(A)

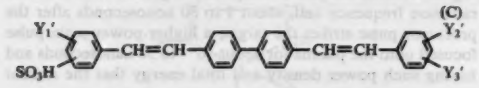


or its sodium, potassium, ammonium or amine salts, wherein R_1' and R_2' independently of one another denote hydrogen or the sulpho group, R_3' denotes hydrogen, alkyl or hydroxyalkyl with 1 to 4 carbon atoms and R_4' denotes alkyl or hydroxyalkyl with 1 to 4 carbon atoms,

(B)

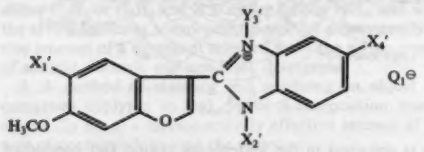


or its sodium, potassium, ammonium or amine salts, wherein R_5' denotes alkyl with 1 to 4 carbon atoms or phenyl and R_6' denotes hydrogen, chlorine or methyl,



(C)

or its sodium or potassium salts, wherein Y_1' denotes hydrogen or chlorine, Y_2' denotes hydrogen, chlorine or the sulpho group and Y_3' denotes hydrogen or chlorine,



(D)

wherein X_1' denotes hydrogen or chlorine, X_2' denotes methyl, phenyl or benzyl, X_3' denotes methyl or benzyl, X_4' denotes hydrogen, chlorine, methyl, methoxy, methylsulphonyl or ethylsulphonyl and Q_1 denotes chlorine, the methosulphate or the p-toluenesulphonic acid radical,

b. 0 to 15 percent by weight of an organic acid,

c. 0 to 15 percent by weight of a complex-forming agent,

d. 0 to 15 percent by weight of an anionic or nonionic surface-active agent except when said surface-active agent is used as carrier material, and

e. 0 to 15 percent by weight of a melting point lowering substance, components (a) – (e) being dissolved in a solid melt of

f. 95 to 30 percent by weight of an organic carrier material which is solid at room temperature and is soluble in water, selected from the group consisting of urea, a urea derivative, an ethylene oxide adduct, a block polymer of polyethylene oxide and polypropylene oxide, a high-molecular weight polyglycol or dimethylsulphone or mixtures thereof.

4,058,481

METHOD OF ELIMINATING FOAM APPEARING ON A LIQUID SURFACE

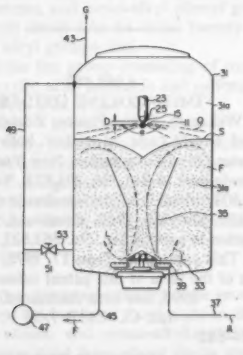
Norio Futai; Toshio Murakami; Yoshimasa Takahara, all of Chiba, and Toshiharu Kumazawa, Fujisawa, all of Japan, assignors to Mitsubishi Precision Co., Ltd. and Director-General of the Agency of Industrial Science and Technology, both of, Japan

Filed July 22, 1976, Ser. No. 707,514

Claims priority, application Japan, July 26, 1975, 50-91469

Int. Cl.² B01D *19/00*

U.S. Cl. 252—321 **6 Claims**



1. A method of eliminating foam appearing on a surface of a fixed amount of liquid content received within a reaction vessel which retains a free inner space left above said surface of said liquid content comprising:

locating a liquid ejecting nozzle member and a subsequent diffusing member at a position within said free inner space of said reaction vessel and away from said surface of said liquid content, said diffusing member being spaced at a preselected distance from said nozzle member such that the liquid particles ejected at a wide angle from said nozzle member impinge upon said diffusing member;

retracting a partial amount of said liquid content from said vessel through a conduit means;

sending said partial amount of said liquid content to said liquid ejecting nozzle member through a second conduit means under a predetermined pressure exerted by a liquid pumping means, and;

diffusing said partial amount of said liquid content through said diffusing member in the form of said liquid particles having therein kinetic energy against said foam thereby causing said foam on said surface of said liquid content to collapse and vanish.

4,058,482

FUEL CELL ELECTRODE

Johannes M. Baris, Durham, Conn.; Charles D. Iacovangelo, Schenectady, N.Y., and Wolfgang M. Vogel, Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1976, Ser. No. 752,417

Int. Cl.² H01M *4/88*

U.S. Cl. 252—425.3 **3 Claims**

1. A method for the manufacture of a fuel cell electrode comprising the steps of:

choosing a polymer, the polymer being selected to be in the form of negatively charged particles having a desired average diameter;

selecting a pore former, the pore former comprising a material which is attacked by an etchant which will not attack the polymer, the pore former being in the form of positively charged particles having an average diameter which is not greater than the average diameter of the polymer particles;

causing the polymer and pore former particles to co-agglomerate;

forming a suspension containing the polymer-pore former co-agglomerates and particles of a fuel cell catalyst;

intimately mixing the co-agglomerates and particles of catalyst;

filtering the suspension to form a layer comprising polymer-pore former co-agglomerates and catalyst;

mounting the layer on a support to define a fuel cell electrode structure;

sintering the electrode structure; and

subjecting the sintered electrode structure to an etchant which will attack the pore former material to thereby produce an electrode having gas channels only in the polymer portions thereof.

4,058,483

ADSORBENT MATERIAL

Richard George Cleveland Henbest, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 14, 1976, Ser. No. 695,415

Claims priority, application United Kingdom, June 13, 1975, 25380/75

Int. Cl.² B01J *21/18*

U.S. Cl. 252—446 **9 Claims**

1. A method of making an adsorptive material which is in shaped discrete pieces comprising mixing active carbon powder with an aqueous solution of sodium silicate to form a moist mixture, forming the moist mixture into shaped discrete pieces, drying the pieces, immersing the pieces in a silicate-insolubiliz-

ing reagent until the silicate-content of the pieces has become insolubilized, washing the pieces with water, and drying the pieces at a temperature of at least 100° C.

4,058,484

AMMONIUM FAUJASITE ZEOLITES

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Sept. 9, 1976, Ser. No. 718,167
Int. Cl.[2] B01J *29/06, 1/04*
U.S. Cl. 252—455 Z **6 Claims**

1. A method of producing ammonium zeolites of the faujasite type which comprises mixing a zeolite of the faujasite type whose exchange position is substantially entirely occupied by Na cations with a solution of an ammonium salt, the quantity of the zeolite, and the concentration of the ammonium cations, being in quantity sufficient to establish a ratio of the equivalents of NH_4 cation in the solution, per equivalent of Na cation in the zeolite in the mixture in excess of about 25, heating the solution to a temperature above about 300° and less than about 450° F for a period of time to reduce the sodium content of the zeolite, expressed as Na_2O, to less than about 1.5% by weight of the exchanged zeolite, on a volatile free basis, and washing the zeolite substantially free of cations of the salt in solution.

2. In the process of claim 1, in which said solution is acid of a pH being between about 2.5 and 5, and said equivalents of the NH_4 ion to the sodium ion in the zeolite being within the range of above about 30 up to about 40, for a period of time sufficient to reduce the Na in the zeolite, expressed as Na_2O, to less than 1% by weight of the zeolite on a volatile free basis.

4,058,485

POROUS METAL-ALUMINA COMPOSITE

Harry Cheung, Buffalo, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 536,646, Dec. 26, 1974, abandoned. This application June 21, 1976, Ser. No. 698,030
Int. Cl.[2] B01J *21/04, 23/42, 23/44, 35/02*
U.S. Cl. 252—466 PT **7 Claims**

1. The combination of a support structure for catalytic materials and a catalytic metal or metal compound deposited on the transition alumina in said structure, said support structure comprising the combination of a metal screen material having deposited thereon a sintered mixture of metal particles and alumina particles, characterized by the following parameters:

at least 50 weight percent of the particles in the sintered mixture are metal particles;

at least 5 weight percent of the particles in the sintered mixture are alumina particles having a surface area of at least 25 square meters per gram; and

the inter-particle porosity in the sintered mixture is between 15 volume percent and 60 volume percent.

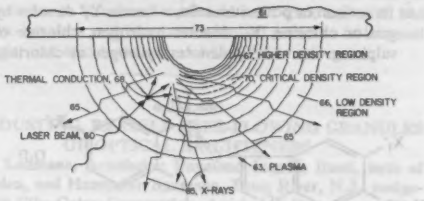
4,058,486

PRODUCING X-RAYS

Philip J. Mallozzi; Harold M. Epstein; Richard G. Jung; David C. Applebaum; Barry P. Fairand, all of Columbus, and William J. Gallagher, Worthington, all of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Dec. 29, 1972, Ser. No. 319,756
Int. Cl.[2] G21G *4/00*
U.S. Cl. 250—493 **20 Claims**

1. A method of producing X-rays that comprises directing radiant energy from a laser onto a target, wherein conversion efficiency of at least about 3 percent is obtained by providing the radiant energy in a low-power precursor pulse of approximately uniform effective intensity focused onto the surface of the target for about 1 to 30 nanoseconds so as to generate an expanding unconfined coronal plasma having less than normal solid density throughout and comprising a low-density (underdense) region wherein the plasma frequency is less than the laser radiation frequency and a higher-density (overdense) region wherein the plasma frequency is greater than the laser radiation frequency and, about 1 to 30 nonoseconds after the precursor pulse strikes the target, a higher-power main pulse focused onto the plasma for about 10^{-3} to 30 nanoseconds and having such power density and total energy that the radiant



energy is absorbed in the underdense region and conducted into the overdense region to heat it and thus to produce X-rays therefrom with the plasma remaining substantially below normal solid density and thus facilitating the substantial emission of X-rays in the form of spectral lines arising from nonequilibrium ionization states.

4,058,487

QUICK LATHERING TOILET BARS AND METHOD OF MAKING SAME

Leon M. Prince, Westfield, N.J., assignor to Lever Brothers Co., New York, N.Y.

Division of Ser. No. 419,558, Nov. 28, 1973, Pat. No. 3,989,647, which is a continuation of Ser. No. 137,288, April 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 54,008, July 10, 1970, abandoned. This application June 14, 1976, Ser. No. 695,708
Int. Cl.[2] C11D *1/12*
U.S. Cl. 252—552 **8 Claims**

1. A non-mushing high lathering synthetic toilet bar having a pH of about 4.5–9.5 and comprising based on the total weight of the actives:

i. 40 to about 85% of a primary alkane sulfonate or a mixture of alkane sulfonates wherein the carbon chain contains 12 carbon atoms or averages 12 carbon atoms;

ii. 5 to about 35% of a natural or synthetic fatty acid or mixtures thereof wherein the carbon chain contains or averages 12 carbon atoms;

iii. 5 to about 30% of a binder modifier selected from the group consisting of alkali metal, magnesium and ammonium salts of C_{12}–C_{18} primary alkyl sulfates; and

iv. based on the total weight of the bar, 5–25% water.

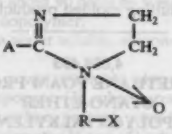
4,058,488

IMIDAZOLINE OXIDES

Reginald L. Wakeman, Paris, France; Zdzislaw W. Dudzinski, Clifton, and Arnold Lada, Montclair, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

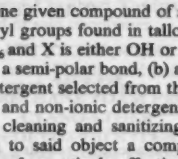
Continuation-in-part of Ser. No. 201,573, Nov. 23, 1971, Pat. No. 3,951,878, which is a continuation-in-part of Ser. No. 804,669, March 5, 1969, abandoned, which is a continuation-in-part of Ser. No. 562,522, July 5, 1966, abandoned. This application Sept. 17, 1975, Ser. No. 614,173
The portion of the term of this patent subsequent to Apr. 20, 1993, has been disclaimed.
Int. Cl.[2] C11D *1/58*
U.S. Cl. 252—542 **4 Claims**

1. A surface-active composition consisting essentially of (a) a surface-actively effective amount of a mixture of compounds having the structure:



wherein A in any one given compound of said mixture represents one of the alkyl groups found in tallow fatty acids, R is either C_2H_4 or C_3H_6 and X is either OH or NH_2, and wherein the arrow indicates a semi-polar bond, (b) a detergently effective amount of a detergent selected from the group consisting of anionic, cationic and non-ionic detergents.

3. A method of cleaning and sanitizing an object which comprises applying to said object a composition consisting essentially of (a) a surface-actively effective amount of a mixture of compounds having the structure:



wherein A in any onegiven compounds of said mixture represents one of the alkyl groups found in tallow fatty acids, R is either C_2H_4 or C_3H_6 and X is either OH or NH_2 and wherein the arrow indicates a semi-polar bond, (b) a detergently effective amount of a detergent selected from the group consisting of anionic, cationic and non-ionic detergents.

4,058,489

DETERGENT COMPOSITION HAVING TEXTILE SOFTENING AND ANTISTATIC EFFECT

Karl Martin Edvin Hellsten, Odsmal, Sweden, assignor to Berol Kemi AB, Stenungsund, Sweden

Filed May 15, 1975, Ser. No. 577,535
Claims priority, application Sweden, May 20, 1974, 7406698
Int. Cl.[2] C11D *1/38, 3/26, 7/32*
U.S. Cl. 252—547 **16 Claims**

1. A detergent composition imparting a good antistatic effect and a good softening effect, consisting essentially of a mixture of surfactants of which

a. from 30 to 90% by weight is a nonionic surfactant having the formula:

$$RA\,(C_nH_{2n}O)_xH$$

wherein

R is a hydrocarbon group selected from the group consisting of alkyl groups having from about eight to about twenty-two carbon atoms, and mono-alkyl phenyl groups having a total of from about four to about twenty-four carbon atoms in the alkyl groups; and

A is selected from the group consisting of oxygen, sulfur, amido, carboxylic acid, sulfoxide and sulfonic groups;

n is a number from 2 to 4; and

x is a number from 4 to about 40; and

b. from 10 to 70% by weight is a surfactant mixture comprising at least one anionic surfactant and at least one cationic surfactant in a charge ratio anionic surfactant to cationic surfactant within the range from about 0.60 to about 0.98; the anionic surfactant having the general formula:

$$R(OC_nH_{2n})_pOSO_3H$$

wherein:

R is a hydrocarbon group selected from the group consisting of alkyl groups having from about eight to about twenty-two carbon atoms, and mono-alkyl-substituted phenyl groups having a total from about six to about eighteen carbon atoms in the alkyl groups;

$(OC_nH_{2n})_p$ represents an alkylene glycol chain where n is selected from the group consisting of 2, 3 and 4 and p is a number from 1 to 10; and salts thereof; and the cationic surfactant being a quaternary ammonium surfactant having the formula:

$$R_1R_2N^+(CH_3)_2X^-$$

wherein:

R_1 and R_2 are selected from the group consisting of alkyl and alkoxy-2-hydroxy propylene groups having from about six to about twenty-two carbon atoms; and

X is an anion.

4,058,490

QUICK LATHERING TOILET BARS AND METHOD OF MAKING SAME

Leon M. Prince, Westfield, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 419,558, Nov. 28, 1973, Pat. No. 3,989,647, which is a continuation of Ser. No. 137,228, April 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 54,008, July 10, 1970, abandoned. This application June 14, 1976, Ser. No. 695,713
Int. Cl.[2] C11D *1/12*
U.S. Cl. 252—554 **8 Claims**

1. A non-mushing high lathering synthetic toilet bar having a pH of about 4.5–9.5 and comprising based on the total weight of the actives:

i. 40% to about 85% of a primary alkane sulfonate or a mixture of alkane sulfonates wherein the carbon chain contains 12 carbon atoms or averages 12 carbon atoms;

ii. 5 to about 35% of a natural or synthetic fatty acid or mixtures thereof wherein the carbon chain contains or averages 12 carbon atoms;

iii. 5 to about 3% of a binder modifier selected from the group consisting of alkali metal, magnesium and ammonium salts of C_{16}–C_{20} alkane disulfonate; and

iv. based on the total weight of the bar, 5–25% water.

4,058,491

CATIONIC HYDROGELS BASED ON HETEROCYCLIC N-VINYL MONOMERS

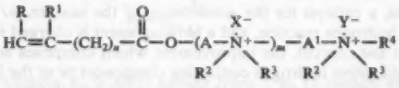
Robert Steckler, San Diego, Calif., assignor to Plastomedical Sciences, Inc., Briarcliff Manor, N.Y.

Filed Feb. 11, 1975, Ser. No. 549,097
Int. Cl.[2] C08F *220/20, 26/00*
U.S. Cl. 260—2.2 R **15 Claims**

1. The cationic, polymeric hydrogel produced by simultaneus polymerization and cross-linking in the presence of a free radical polymerization catalyst in an amount of from about 0.05 to about 4 weight percent, based on the total weight of monomers, and at a temperature of from about 20° C. to about 125° C., of a mixture consisting essentially of the following monomers:

a. about 20 to about 95 weight percent, based on the total weight of monomers, of a heterocyclic N-vinyl monomer selected from the group consisting of N-vinyl lactams, N-vinyl succinimide, N-vinyl diglycoylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone, N-vinyl-5-methyl-3-morpholinone and N-vinyl imidazole;

b. about 50 to about 0.05 weight percent, based on the total weight of monomers, of a cationic monoethylenically unsaturated quaternary ammonium monomer, capable of copolymerizing with (a) and having the formula:



wherein:

R represents hydrogen, methyl or aryl;

R^1 represents hydrogen or alkyl of 1 to about 18 carbons;

A and A^1, each of which may be the same or different, each represents an alkylene group of from about 2 to about 8 carbons or an arylene group;

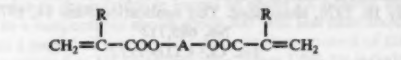
R^2, R^3 and R^4, each of which may be the same or different, each represents alkyl, aryl or alkaryl or the R^2 and R^3 on the same nitrogen atom, taken together represent a divalent aliphatic group of 4 to 5 atoms which jointly with the amino nitrogen forms a 5 or 6 membered heterocyclic amino group;

X and Y, each of which may be the same or different, each represents an anion forming the anionic portion of a quaternary ammonium group;

n represents an integer, including 0, of from 0 to about 10; and

m represents an integer, including 0, of from 0 to about 5.

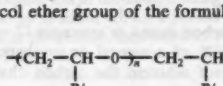
c. about 0.2 to about 12 weight percent, based on the total weight of monomers, of a polymerizable cross-linking agent capable of copolymerizing with (a) and (b); and having the formula:



wherein

R represents a member of the group consisting of hydrogen and alkyl of from 1 to about 4 carbon atoms;

A represents alkylene of from 2 to about 10 carbons or a polyglycol ether group of the formula:



R′ represents a member of the group consisting of hydrogen and alkyl of 1 to 2 carbon atoms; and

n represents an integer of from 1 to about 20; and

d. from 0 to about 50 weight percent, based on the total weight of monomers, of a monoethylenically unsaturated acrylic monomer capable of copolymerizing with (a), (b) and (c) and capable of polymerizing to a high molecular weight, in excess of 100,000 and selected from the group consisting of acrylamides, methacrylamides, acrylonitrile, methacrylonitrile, alkyl acrylates and methacrylates, hydroxyalkyl acrylates and methacrylates, and monohydroxy and monoalkoxy polyalkylene glycol acrylates and methacrylates; and provided that $(a) \cong (d)$ and $(a)+(d) =$ about 40 to about 95 weight percent.

4,058,492

PROCESS FOR MOLDING POLYURETHANE FOAMS

Wulf von Bonin; Helmut Kleimann, both of Leverkusen, and Udo Post, Bergisch-Gladbach (Paffrath), all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 521,427, Nov. 6, 1974, abandoned. This application June 18, 1976, Ser. No. 697,589

Claims priority, application Germany, Jan. 10, 1974, 2404310

Int. Cl.² C08G *18/36*

U.S. Cl. 260—2.5 AM **6 Claims**

1. In a process for producing a foam plastic which readily separates from the mold in which it has been foamed wherein a foamable reaction mixture containing an organic polyisocyanate, an organic compound having a molecular weight of about 62 to about 10,000 which contains reactive hydrogen atoms, a catalyst for the acceleration of the isocyanate/reaction hydrogen reaction, and a blowing agent is charged to the mold and reacted, the improvement which comprises adding to said active hydrogen containing component or to the foamable reaction mixture as a third stream an esterification reaction product of about 0.8 mol to about 4 mols of ricinoleic acid and 1 mol of a long chain fatty acid containing more than 8 carbon atoms which is substantially free of alcoholic hydroxyl groups, in an amount sufficient to improve the mold release properties of the resulting molded product.

4,058,493

POLYESTER URETHANE FOAM PRODUCED WITH CYANO-ETHER POLYSILOXANE-POLYOXYALKYLENE COPOLYMERS

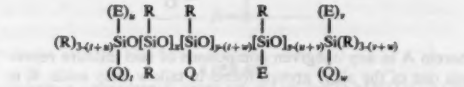
Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 536,884, Dec. 27, 1974, Pat. No. 3,979,419. This application May 28, 1976, Ser. No. 691,020

Int. Cl.² C08G *18/42; C08K 5/54*

U.S. Cl. 260—2.5 AH **14 Claims**

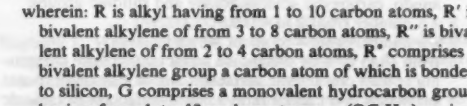
1. A process for producing flexible polyurethane foam which comprises simultaneously reacting and foaming a reaction mixture containing: (a) a polyester polyol reactant having an average of at least two hydroxyl groups per molecule; (b) a polyisocyanate reactant containing at least two isocyanato groups per molecule; (c) a blowing agent; (d) a catalyst comprising an amine; and (e) a foam stabilizer comprising polysiloxane-polyoxyalkylene copolymers having the average composition,



wherein: R is alkyl having from one to 10 carbon atoms; Q is a cyano-bearing ether group having the formula, —(O)$_q$R-'OR"CN, wherein q is 0 or 1, R′ is bivalent alkylene having from 3 to 8 carbon atoms and R" isbivalent alkylene of 2 to 4 carbon atoms; E is a polyoxyalkylene block having the formula, —(R°)$_p$—(OC$_e$H$_{2e}$)$_b$—OG, wherein R° comprises a bivalent alkylene group a carbon atom of which is bonded to silicon, G comprises a monovalent hydrocarbon group having from 1 to 12 carbon atoms, p is zero or one, —(OC$_e$H$_{2e}$)$_b$— is a polyoxyalkylene chain constituted of at least 75 weight percent of oxyethylene and wherein b has an average value from about 3 to about 30; each of t, u, v and w is independently 0 or 1 provided each of the sums $b+u$ and $v+w$ is 0 or 1; each of the sums $t+w$ and $u+v$ is independently 0, 1 or 2; x is zero or a positive number having an average value up to about 20; y has an average value from about 2 to about 20; and z has an average value from about 2 to about 30.

7. A solution composition which comprises components (1) and (2) and at least one of components (3) and (4) wherein:

component (1) is a siloxane-polyoxyalkylene copolymer having the average composition,



wherein: R is alkyl having from 1 to 10 carbon atoms, R′ is bivalent alkylene of from 3 to 8 carbon atoms, R" is bivalent alkylene of from 2 to 4 carbon atoms, R° comprises a bivalent alkylene group a carbon atom of which is bonded to silicon, G comprises a monovalent hydrocarbon group having from 1 to 12 carbon atoms, —(OC$_e$H$_{2e}$)$_b$— is a polyoxyalkylene chain constituted of at least 75 weight percent of oxyethylene and wherein the average value of b is from about 3 to about 30, p is 0 or 1, q is 0 or 1, x is 0 or a positive number having an average value up to about 20, y has an average value from about 2 to about 20, and z has an average value from about 2 to about 30;

component (2) is an organic acidic component comprising at least one acid of the group consisting of an aliphatic and a cycloaliphatic monocarboxylic acid having from 15 to 20 carbon atoms and is present in said solution in an amount

from about 5 to about 90 parts by weight per 100 parts by weight of said copolymer;

component (3) is a water soluble, silicon-free organic surfactant;

component (4) is a water-soluble glycol; and wherein the weight of component (3) when present, the weight of component (4) when present, and the combined total weight of components (3) and (4) when both are present, ranges from about 5 to about 90 parts by weight per 100 parts by weight of said copolymer.

4,058,494

POLYETHER URETHANE FOAM PRODUCED WITH CYANO-ETHER POLYSILOXANE-POLYOXYALKYLENE COPOLYMERS

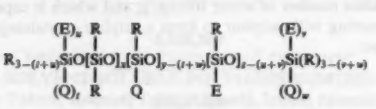
Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 536,885, Dec. 27, 1974, Pat. No. 3,979,420. This application May 28, 1976, Ser. No. 691,021

Int. Cl.[2] C08G 18/14; C08K 5/54

U.S. Cl. 260—2.5 AH **5 Claims**

1. A process for producing flexible polyurethane foam which comprises simultaneously reacting and foaming a reaction mixture containing: (a) a polyether polyol reactant containing an average of at least two hydroxyl groups per molecule; (b) a polyisocyanate reactant containing at least two isocyanato groups per molecule; (c) a blowing agent; (d) a catalyst comprising an amine; and (e) a foam stabilizer comprising polysiloxane-polyoxalkylene copolymers having the average composition,



wherein: R is alkyl having from 1 to 10 carbon atoms; Q is a cyano-bearing ether group having the formula, $-(O)_qR'OR''CN$, where q is zero or one, R'' is bivalent alkylene of 3 to 8 carbon atoms and R'' is bivalent alkylene of 2 to 4 carbon atoms; E is a polyoxyalkylene block having the formula, $-(R^*)_p-(OC_aH_{2a})_b-OG$, where R* comprises a bivalent alkylene group a carbon atom of which is bonded to silicon, G comprises a monovalent hydrocarbon group having from 1 to 12 carbon atoms, p is zero or one, a has a value from 2 to 4 provided from about 20 to about 65 weight percent of the polyoxyalkylene chain, $-(OC_aH_{2a})_b-$, is constituted of oxyethylene units, and b has an average value such that the average molecular weight of the chain is from about 1000 to about 6000; each of t, u, v and w is independently zero or one provided each of the sums $t+u$ and $v+w$ is independently zero or one; each of the sums $t+w$ and $u+v$ is independently zero, one or two; x has an average value from about 10 to about 200; y has an average value from about 2 to about 100; and z has an average value from about 2 to about 30.

4,058,495

PREPARATION OF HIGH BULK DENSITY/LOW POROSITY PVC RESINS

Joseph Serratore, Sarnia; Laurence F. King, Mooretown; Thomas H. Sutherland, Sarnia, and James R. Wallace, Camlachie, all of Canada, assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 586,879, June 13, 1975. This application Sept. 27, 1976, Ser. No. 727,043

Int. Cl.[2] C08L 1/26

U.S. Cl. 260—17 A **10 Claims**

1. A polyvinyl chloride resin having a bulk density in excess of 0.65 g/ml, a porosity or plasticizer acceptance less than about 15 ml per 100g resin, a median particle size of about 0.01 to about 0.3 mm, wherein each resin particle consists essentially of polyvinyl chloride and a C_{12}–C_{35} aliphatic compound selected from the group consisting of alcohols, acids, esters and waxes.

8. A method of producing a high bulk density/low porosity polyvinyl chloride resin which comprises suspension polymerizing vinyl chloride in the presence of about 0.1 to about 5 parts of C_{12}–C_{35} aliphatic alcohol, aliphatic acid, aliphatic ester or wax, a monomer soluble/water insoluble initiator and about 0.02 to about 0.5 parts of hydroxyethyl cellulose wherein said parts are based on 100 parts of vinyl chloride monomer and wherein said polymerization is performed in an unbaffled reactor under low shear conditions.

4,058,496

POLYESTER-AMINOPLAST BULKING AGENTS

Eugene M. Holda, Glen Ellyn, and John C. Lark, St. Charles, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 534,158, Dec. 19, 1974, Pat. No. 3,975,566. This application Feb. 2, 1976, Ser. No. 654,702

Int. Cl.[2] C08L 67/02

U.S. Cl. 260—21 **5 Claims**

1. A composition comprising an aminoplast and a water-soluble polyester resin having a molecular weight of not more than about 4.000 and an acid number of at least 35 which comprises (1) a branched chain three-dimensional polyester core having an acid number less than about 25 comprising the reaction product of a polyhydroxyl compound, dicarboxylic acid compound, monocarboxylic acid compound and polycarboxylic acid compound having at least three acyl moieties and (2) pendant carboxylic acid moieties comprising polycarboxylic acid compounds having at least three acyl moieties, wherein said polyester resin contains no non-benzenoid unsaturation and none of the hydroxyl compounds have secondary hydroxyl groups.

4,058,497

ONE PACKAGE SYSTEM COLD-SETTING COATING COMPOSITIONS

Keiun Ko, Minoo; Naomitsu Takashina, Fujisawa; Senzo Shimizu, Odawara; Masuya Ikegami, Chigasaki, and Yoshinori Iwamoto, Odawara, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sept. 2, 1975, Ser. No. 609,516

Claims priority, application Japan, Sept. 10, 1974, 49-104638

Int. Cl.[2] C09D 3/64, 3/80, 5/08

U.S. Cl. 260—22 A **7 Claims**

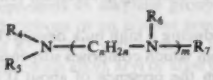
1. A one-package system cold-setting coating composition which consists essentially of (i) an acrylic copolymer having carboxyl groups in its molecule or an alkyd resin as a resin component, (ii) an aluminum alkoxide complex, (iii) a keto-enol tautomeric compound and (iv) a solvent, and (v) from 0.01 to 10 percent by weight of at least one nitrogen compound based on the weight of the composition comprising (i), (ii), (iii) and (iv), said nitrogen compound being selected from the group consisting of

a. a monoamine or a hydroxymonoamine having the formula

I

wherein R_1 is alkyl having from 1 to 12 carbon atoms, alkenyl having from 2 to 12 carbon atoms, cyclohexyl, benzyl or hydroxyalkyl having from 1 to 4 carbon atoms, and each of R_2 and R_3 is hydrogen or the same as R_1;

b. a polyamine having the formula



II

wherein n is an integer of 1 – 6, m is an integer of 1 – 3 and each of R_4, R_5, R_6 and R_7 is hydrogen or alkyl having from 1 to 4 carbon atoms, and C_nH_{2n} is alkylene;

c. an aromatic amino compound having the formula

III

wherein each of R_8 and R_9 is hydrogen or alkyl having from 1 to 4 carbon atoms;

d. a heterocyclic compound selected from the group consisting of 1,2,4-triazole, benzotriazole, imidazole and morpholine; and

e. an amine selected from the group consisting of guanidine and hexamethylenetetramine.

4,058,498

PROCESS FOR THE PREPARATION OF TREATING LIQUIDS, STABLE UNDER STORAGE, ESPECIALLY FOR IMPROVING THE WRINKLE-FREE CHARACTERISTICS OF CELLULOSIC FABRICS TREATED WITH THE SOLUTION

Jean Claude Bonnet, 47 avenue de France, Blois (Loir & Cher), France

Filed Aug. 1, 1975, Ser. No. 601,043
Claims priority, application France, Aug. 2, 1974, 74.27658
Int. Cl.[2] C08L *61/24*
U.S. Cl. 260—29.4 R **9 Claims**

1. A process for preparing a fabric-treatment liquid, especially to reduce wrinkling of cellulosic fabrics and adapted to be stored for long periods, said process comprising:

a. in a first stage condensing urea and formaldehyde in an aqueous solution in the presence of glyoxylic acid at a pH between two and five at a temperature of 20° C to 100° C and with a molar ratio of urea/formaldehyde/glyoxylic acid of substantially 1 : 2 to 10 : 0.03 to 0.6 to produce a precondensate; and

b. in a second stage reacting said precondensate at a pH between 6 and 7, at a temperature between 20° C and 60° C with an additional quantity of urea to produce a final condensation with an overall molar ratio of urea/formaldehyde/glyoxylic acid of 1 : 1.5 to 3.5 : 0.03 to 0.6.

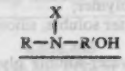
4,058,499

PIGMENTED LATEX PAINTS HAVING SUPERIOR GLOSS PREPARED BY GRINDING A PIGMENT INTO A SOLUTION OF A COPOLYMER OF AN UNSATURATED CARBOXYLIC ACID

Kazys Sekmakas, Chicago, and Kenneth K. Hesler, West Chicago, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed June 24, 1975, Ser. No. 589,876
Int. Cl.[2] C08L *33/02*
U.S. Cl. 260—29.6 RW **10 Claims**

1. A method of producing a high gloss, air drying water base, pigmented latex paint comprising grinding a pigment into a water-free solution of an at least partially neutralized carboxyl-functional addition copolymer of monoethylenically unsaturated monomers including at least about 3% by weight of monoethylenically unsaturated carboxylic acid in water miscible organic solvent, the major proportion of said pigment being titanium dioxide, and the pigment volume concentration being at least 10%, said copolymer being at least partially neutralized with an hydroxy amine having the formula:



in which R is hydrogen or an alkyl group, R' is an alkylene group, and X is either R or R'OH, to render the said copolymer dispersible in water, and thereby form a nonaqueous pigment paste, and then mixing the nonaqueous pigment paste with an aqueous latex consisting essentially of emulsified aqueous emulsion copolymer particles having a T_g below 20° C.

4,058,500

SULPHUR CEMENTS, PROCESS FOR MAKING SAME AND SULPHUR CONCRETES MADE THEREFROM

Alan H. Vroom, 10728 Willowfern Drive S.E., Calgary, Alberta, Canada

Continuation of Ser. No. 581,735, May 29, 1975, abandoned. This application Feb. 20, 1976, Ser. No. 659,659
Int. Cl.[2] C08F *28/02*; C08K *3/06*
U.S. Cl. 260—42.24 **24 Claims**

1. A sulphur cement composition comprising:

a. sulphur;

b. a viscosity increasing surface active finely divided particulate stabilizer;

and c. up to about 10 parts by weight of the total amount of sulphur of an olefinic hydrocarbon polymer material derived from petroleum and having a non-volatile content greater than about 50% by weight and a minimum Wijs iodine number of about 100 cg/g; and which is capable of reacting with sulphur to form a sulphur-containing polymer.

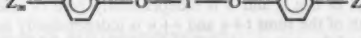
4,058,501

POLYMER COMPOSITIONS

Arnold L. Anderson, Antioch, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 330,779, Feb. 8, 1973, abandoned. This application July 30, 1976, Ser. No. 710,290
Int. Cl.[2] C08K *5/06, 3/22*
U.S. Cl. 260—45.75 B **26 Claims**

1. A polymer composition comprising a three component system consisting of (1) elastomer, (2) a bis-phenoxy compound, which functions as a flame retardant for said composition, having the formula



wherein (a) Z is bromine; (b) m and m' are independent and are integers having a value of from 1 to 5 with the proviso that the bromine atom content is from 6 to 10 bromine atoms; and (c) T is a straight or branched chain carbon group having from one to four carbon atoms, and (3) a flame retardant enhancing agent.

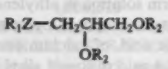
4,058,502

STABILIZED COMPOSITIONS CONTAINING HINDERED HYDROXYALKANOATES

Martin Dexter, Briarcliff Manor, and David Herbert Steinberg, Bronx, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 532,126, Dec. 12, 1974, Pat. No. 3,987,086. This application June 7, 1976, Ser. No. 693,386
Int. Cl.[2] C08K *5/13*
U.S. Cl. 260—45.85 B **12 Claims**

1. A composition of matter comprising an organic material subject to degradation and from 0.01 to 5% by weight of a stabilizing compound of the formula

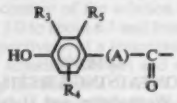


wherein

R_1 is alkyl of 1 to 30 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, alkylthioethyl of 4 to 27 atoms in the chain or alkylpolyoxyalkylene of 4 to 27 atoms in the chain,

Z is oxygen or sulfur,

R_2 is the group



R_3 is hydrogen, alkyl of 1 to 8 carbon atoms, cycloalkyl of 5 to 6 carbon atoms or α-methylbenzyl,

R_4 is alkyl of 1 to 8 carbon atoms or cycloalkyl of 5 to 6 carbon atoms,

R_5 is hydrogen or lower alkyl of 1 to 4 carbon atoms, or R_3 and R_5 together form a butylene chain which, together with the phenyl ring, form a tetrahydronaphthyl group, and provided when R_3 is hydrogen, R_5 is alkyl and R_4 is located on the carbon atom ortho to the hydroxyl group, and

A is a covalent carbon bond or a straight or branched lower alkylene having 1 to 8 carbon atoms.

4,058,503

PROCESS FOR PREPARING ORGANIC SOLVENT-SOLUBLE POLY(AMIDE-IMIDE)

Toshio Yukuta, Kodaira; Takashi Ohashi, Iruma; Masumi Saito, Tanashi, and Katsuhiko Arai, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 10, 1975, Ser. No. 548,841

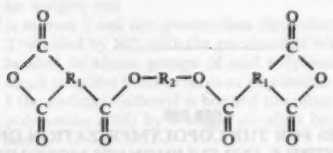
Claims priority, application Japan, Feb. 8, 1974, 49-15399

Int. Cl.[2] C08G *73/08, 73/14*

U.S. Cl. 260—47 CP **14 Claims**

1. A process for producing poly (amide-imide) elastomer having a number average molecular weight ranging from 10,000 to 100,000, which comprises reacting

(1) an acid anhydride functional polymer represented by the following formula



wherein R_1 represents a trivalent hydrocarbon radical having at least 2 carbon atoms and R_2 represents a hydroxyl functional polymer radical having a number average molecular weight ranging from 700 to 10,000 selected from the group consisting of polyether glycol, polyester glycol, polyester ether glycol, poly olefin glycol radicals, and a polyol radical which is obtained by the ozonization of a poly unsaturated hydrocarbon having unsaturated double bond units in the main or side chain, followed by the reduction of the resulting ozonide product with reducing agent,

with (2) a dicarboxylic acid dihydrazide in the presence of an aprotic dipolar solvent at a temperature ranging from −10° C to 30° C, the equivalent ratio of said acid anhydride functional polymer (1) to said dicarboxylic acid dihydrazide (2) being from 0.95 to 1.05.

4,058,504

PROCESS FOR TERMINATING POLYPHENYLENE ETHERS REACTIONS WITH AMINO CARBOXYLIC ACIDS AND REDUCING AGENTS

Eiichi Yonemitsu, Kashiwa; Akitoshi Sugio, Ohmiya; Atuo Kuramoto, and Hiroyuki Urabe, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Apr. 16, 1976, Ser. No. 677,843

Claims priority, application Japan, Apr. 18, 1975, 50-47259

Int. Cl.[2] C08G *65/44*

U.S. Cl. 260—47 ET **4 Claims**

1. In a process for producing polyphenylene ethers which comprises reacting phenols with oxygen in the presence of a complex catalyst containing at least one metallic compound selected from the group consisting of copper compound, manganese compound and cobalt compound, the improvement which comprises terminating the polymerization reaction by adding an aminocarboxylic acid derivative and a reducing agent to the polymerization reaction mixture at a stage of the desired degree of polymerization of the resulting polyphenylene ether, said aminocarboxylic acid derivative being at least one member selected from the group consisting of polyalkylene polyamine polycarboxylic acids, cycloalkylene polyamine polycarboxylic acids, polyalkylene ether polyamine polycarboxylic acids, aminopolycarboxylic acids, aminocarboxylic acid, alkali metal or alkaline earth metal salts of these acids, and alkali metal/alkaline earth metal mixed salts of these acids, and said reducing agent being at least one member selected from the group consisting of sulfur suboxides, salts of lower oxyacids of sulfur, salts containing a metal in lower atomic valency of higher oxyacids or hydroacids, nitrogen-containing reducing compounds selected from the group consisting of hydroxylamine and salts thereof and hydrazine and boron hydride

said aminocarboxylic acid derivative being added in an amount of at least 1 mole per mole of the metallic compound in said complex catalyst

said reducing agent being added in an amount of 1.0 to 15.0 moles per mole of the metallic compound in the complex catalyst.

4,058,505

CHAIN-EXTENDING AMINE END-CAPPED POLYIMIDES

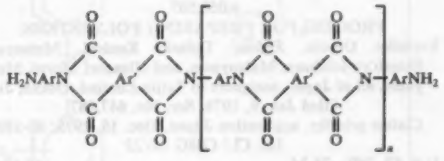
Gaetano Francis D'Alelio, South Bend, Ind., assignor to University of Notre Dame du Lac, Notre Dame, Ind.

Division of Ser. No. 363,801, May 25, 1973, Pat. No. 3,897,395. This application Mar. 14, 1975, Ser. No. 558,448

Int. Cl.[2] C08G *73/10*

U.S. Cl. 260—47 CP **18 Claims**

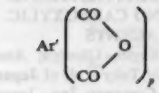
1. A polymeric chain-extending and cross-linking process comprising: reacting, at a temperature of about from ambient temperatures to 300° C, a polyimide of the formula:



wherein

Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical,

Ar is a divalent aromatic organic radical, and *n* is a positive integer of at least 1, with an anhydride of the formula:



wherein

p is 3, and

Ar′ is a hexavalent aromatic organic radical, the six carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical.

4,058,506

THERMOPLASTIC, ELASTIC POLYURETHANES WHICH ARE SOLUBLE IN ETHERS AND/OR KETONES

Guenter Vaeth, Limburgerhof; Rudolf Bachmann, Frankenthal; Heinrich Hartmann; Herbert Spoor, both of Limburgerhof, and August Lehner, Roedersheim-Gronau, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 25, 1975, Ser. No. 607,099

Claims priority, application Germany, Sept. 6, 1974, 2442763

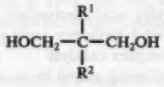
Int. Cl.[2] C08G *18/44, 18/48, 18/76*

U.S. Cl. 260—75 NP **9 Claims**

1. Thermoplastic, elastic polyurethanes which are soluble in ethers and/or ketones and have a high surface hardness and high modulus of elasticity, which are obtained by reaction of

A. one mole of a lineaar polyester-ol and/or polyether-ol of molecular weight from 600 to 4,000,

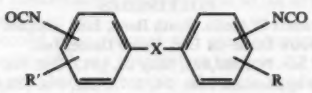
B. from 4 to 16 moles of a branched-chain diol of the formula



in which R^1 is alkyl of 1 to 4 carbon atoms and R^2 is hydrogen or alkyl of 1 to 4 carbon atoms and optionally

C. from 0.001 to 1 mole of an aliphatic triol, with

D. from 5 to 18.5 moles of an aromatic diisocyanate of the formula



in which X is methylene or a SO_2 group and R and R′ are hydrogen, chlorine and/or methyl, the ratio of the number of hydroxyl groups employed to the number of isocyanate groups being from about 1:0.98 to 1:1.08.

4,058,507

PROCESS FOR PREPARING POLYESTERS

Yorihiko Omoto, Ehime; Tadashi Konishi, Matsuyama; Shigehiro Ichihara, Matsuyama, and Hisanori Murai, Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jan. 9, 1976, Ser. No. 647,887

Claims priority, application Japan, Dec. 18, 1975, 50-150128

Int. Cl.[2] C08G *63/22*

U.S. Cl. 260—75 M **13 Claims**

1. A process for preparing a polyester which comprises reacting a di-lower alkyl ester of a difunctional carboxylic acid at least 90 mole% of which consists of terephthalic acid with a polymethylene glycol containing 2 to 10 carbon atoms at least 90 mole% of which consists of ethylene glycol in the presence of an ester-interchange reaction catalyst to form an ester-interchange reaction product, and then polycondensing it in the presence of a polycondensation catalyst, characterized in that a substantially uniform solution in ethylene glycol of (A) 20 to 150 millimole%, based on said di-lower alkyl ester of the difunctional carboxylic acid, of calcium acetate and (B) 2 to 25 millimole%, based on said di-lower alkyl ester, of cobalt acetate is used as the ester-interchange reaction catalyst and the ester-interchange reaction product is filtered through a filter having a size of 200 to 1,000 Tyler's mesh before carrying out the polycondensation of the ester-interchange reaction product.

4,058,508

POLYMERS CONTAINING URETHANE GROUPS

Herbert Naarmann, Wattenheim, and Heinz Pohlemann, Limburgerhof, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

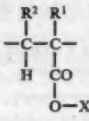
Filed Nov. 17, 1975, Ser. No. 632,641

Claims priority, application Germany, Nov. 30, 1974, 2456737

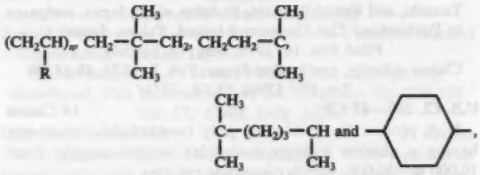
Int. Cl.[2] C08F *18/24;* C08E *18/22;* C08G *63/00;* C08F *20/26*

U.S. Cl. 260—77.5 BB **6 Claims**

1. A solid polymer which contains structural units of the formula



in which R^1 is H or CH_3, R^2 is H, COOR, COOM, CONHR or COXNH-COOR[3], where M is a metal cation, X is CH_2,



n is from 1 to 50 and R is H, alkyl, cycloalkyl or aryl and R^3 is alkyl or cyclohexyl.

4,058,509

PROCESS FOR THE COPOLYMERIZATION OF ACRYLONITRILE AND SULPHONATE MONOMERS

Henri Menand, Saint-Fons, and André Mison, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation-in-part of Ser. No. 110,758, Jan. 28, 1971, abandoned. This application Apr. 16, 1975, Ser. No. 568,448

Claims priority, application France, Jan. 30, 1970, 70.03350

Int. Cl.[2] C08F *28/00;* C08G *75/24*

U.S. Cl. 260—79.7 **11 Claims**

1. A process for the preparation of acrylonitrile unsaturated sulphonate copolymers containing at least 5% by weight of sulphonate units, which comprises polymerising a mixture of monomers consisting of (i) acrylonitrile and (ii) unsaturated sulphonate in an aqueous medium containing 5 to 30% by weight of an inorganic salt selected from halides and nitrates of ammonia or of a metal of Group IA or IIA of the Periodic Table (Handbook of Chemistry and Physics, 45th Edition, B-2).

4,058,510

PROCESS FOR SEPARATING SODIUM LAURYL SULFATE (SLS) FROM A SLS/PROTEIN COMPLEX

Mary C. Concilio-Nolan, New York, and Pei K. Chang, Montrose, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed May 30, 1975, Ser. No. 582,490
Int. Cl.[2] A23J 1/20
U.S. Cl. 260—112 R 7 Claims

1. A process for treating a sodium lauryl sulfate-whey protein complex to form an egg white substitute with recovery of the sodium lauryl sulfate which comprises either (a) adjusting the pH and solids content of the solution containing the complex to from about 5.0 to about 6.5 and from about 5% to about 30% by weight, respectively, at a temperature of about 0° C. to about 5° C. or (b) adjusting the pH and solids content of the solution containing the complex to from about 11 to about 13 and from about 2.5% to about 10%, by weight, respectively, at a temperature of from about 0° C. to about 5° C. to thereby form a sodium lauryl sulfate-rich precipitate and a supernatant solution and separating the precipitate and supernatant solution.

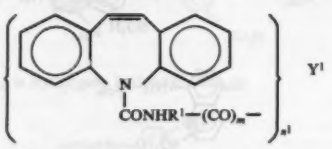
4,058,511

TEGRETOL ANTIGENS AND ANTIBODIES

Prithipal Singh, Sunnyvale, Calif., assignor to Syva Company, Palo Alto, Calif.

Filed Jan. 12, 1976, Ser. No. 648,339
Int. Cl.[2] C07G 7/00
U.S. Cl. 260—112 B 11 Claims

1. A compound of the formula:



wherein:

m is 0 or 1,

R^1 is a bond or an aliphatic radical of from 1 to 8 carbon atoms having from 0 to 1 site of ethylenic unsaturation as the only unsaturation and from 0 to 1 heteroatom of atomic number 7 to 8 bonded solely to carbon with the proviso that R^1 has at least 2 carbon atoms when *m* is 0;

Y^1 is an antigenic poly(amino acid) of at least 1,000 molecular weight; and

n^1 is at least 1 and not greater than the molecular weight of Y^1 divided by 500, with the proviso that when *m* is OR^1 is bonded to amino groups of said poly(amino acid) by a single covalent bond to form an alkylamino and when *m* is 1 the carboxy carbonyl is bonded to amino groups of said poly(amino acid) by a single covalent bond to form an amide.

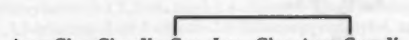
4,058,512

SYNTHETIC PEPTIDES HAVING GROWTH PROMOTING ACTIVITY

Hans Sievertsson, Sollentuna; Ronny Hugo Loritz Lundin, Stockholm, and Gertrud Elisabeth Westin Sjodahl, Sodertalje, all of Sweden, assignors to AB Kabi, Stockholm, Sweden

Filed Apr. 28, 1975, Ser. No. 571,995
Int. Cl.[2] C07C 103/52; A61K 37/00; C12B 9/00
U.S. Cl. 260—112.5 R 7 Claims

1. Synthetic peptides of the general formula



and the corresponding reduced, linear form where the link between the two Cys moieties in the oxidized form represents the dithio group, —S—S—; X = Ser or Lys; and Y = OH or Thr - Glu - Gly -Phe.

4,058,513

PENTAPEPTIDES AND METHODS FOR THEIR PRODUCTION

Francis John Tinney, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Filed June 23, 1976, Ser. No. 699,126
Int. Cl.[2] C07C 103/52
U.S. Cl. 260—112.5 LH 10 Claims

1. A pentapeptide of the formula

X-R-His(benzyl)-His(benzyl)-R^1-Trp-R^2-Y

wherein X is t-butoxycarbonyl or benzyloxycarbonyl, R is a single bond or Pro; R^1 is Ser(benzyl) or Tyr(benzyl); R^2 is a single bond or Ala and Y is lower alkoxy, amino, lower alkylamino or di(lower alkyl)amino with the proviso that the total number of amino acid units when R and R^2 are combined is one.

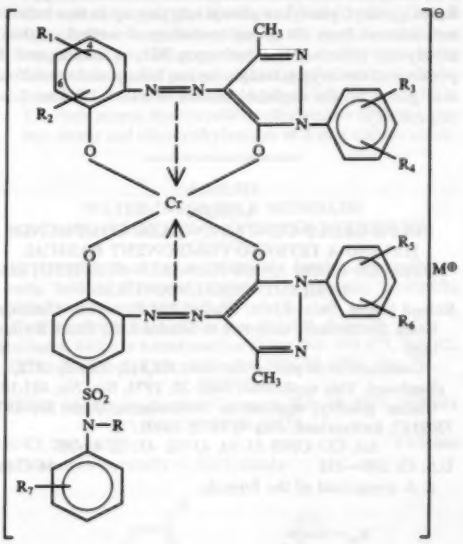
4,058,514

ASYMMETRIC 1:2 CHROMIUM COMPLEXES OF MONOAZO COMPOUNDS HAVING 1-ARYL-3-METHYL-PYRAZOLONE-5 COUPLING COMPONENTS

Hanspeter Uehlinger, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Feb. 24, 1975, Ser. No. 552,241
Claims priority, application Switzerland, Feb. 28, 1974, 2827/74
Int. Cl.[2] C09B 45/16
U.S. Cl. 260—145 B 30 Claims

1. A compound of the formula



wherein

R is hydrogen or alkyl of 1 to 4 carbon atoms,

R_1 is hydrogen, halo or nitro,

R_2 is hydrogen, halo, nitro or $—SO_3M''$,

R_3 is hydrogen, halo or alkyl of 1 to 4 carbon atoms,

R_4 is hydrogen, halo, alkyl of 1 to 4 carbon atoms or —SO_3M'',

each of R_5, R_6 and R_7 is independently hydrogen, halo or alkyl of 1 to 4 carbon atoms, and

M^+ is a cation,

wherein M'' is hydrogen or a cation, and

each halo is independently fluoro, chloro or bromo, with the proviso that

i. R_1 and R_2 occupy the 4- and 6-positions,

ii. when R_4 is —SO_3M'', one of R_1 and R_2 is halo or nitro in the 4-position, and

iii. the compound contains a single —SO_3M'' group.

4,058,515

METALLIZED PHENYL-AZO-NAPHTHOL COMPOUNDS

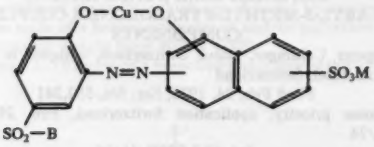
Hans Alfred Stingl, Toms River, and John Elliott, Pine Beach, both of N.J., assignors to Toms River Chemical Corporation, Toms River, N.J.

Continuation of Ser. No. 257,645, May 30, 1972, abandoned. This application May 31, 1974, Ser. No. 475,225

Int. Cl.[2] C09B *45/18*

U.S. Cl. 260—151 **5 Claims**

1. A compound of the formula



wherein B is benzyl or -NRR_1, wherein R is selected from the group consisting of hydrogen, methyl, ethyl, β-cyanoethyl, β-hydroxyethyl, β-hydroxypropyl and γ-hydroxypropyl; and R_1 is C_{2-8}-alkyl, phenyl or phenyl carrying up to two substituents selected from the group consisting of methyl, methoxy, ethoxy and chlorine; M is hydrogen, NH_4 or sodium; and the positions of the oxygen bridge, the azo linkage and the sulfonic acid group on the naphthol residue is either 1-2-4 or 2-1-6, respectively.

4,058,516

SULFO GROUP-CONTAINING AZO COMPOUNDS HAVING A TETRAZO COMPONENT RADICAL DERIVED FROM AN OPTIONALLY SUBSTITUTED 3,8-DIAMINODIBENZOFURAN

Roland Mislin, Saint-Louis, France, and Hanspeter Uehlinger, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

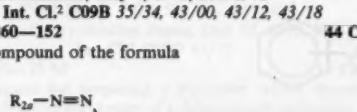
Continuation-in-part of Ser. No. 376,512, July 5, 1973, abandoned. This application June 20, 1974, Ser. No. 481,181

Claims priority, application Netherlands, June 29, 1973, 7309117; Switzerland, July 4, 1972, 10091/72

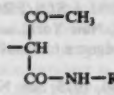
Int. Cl.[2] C09B *35/34, 43/00, 43/12, 43/18*

U.S. Cl. 260—152 **44 Claims**

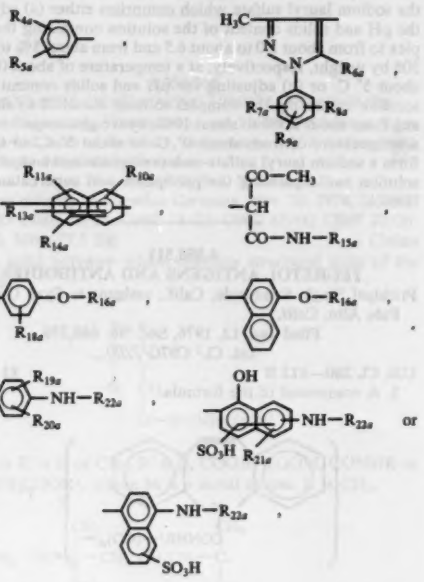
1. A compound of the formula



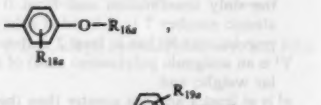
or a salt thereof, wherein (a) one of R_{2a} and R_{3a} is



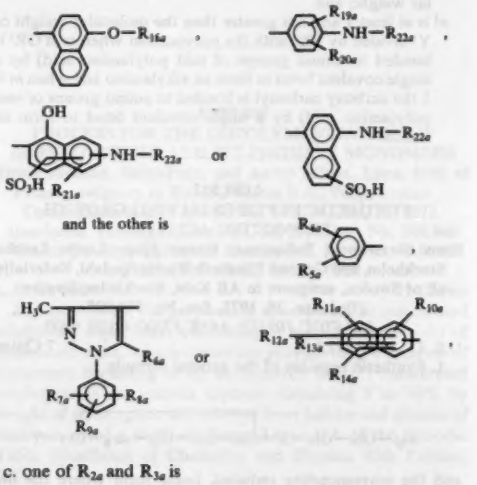
and the other is



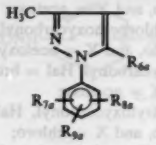
b. one of R_{2a} and R_{3a} is



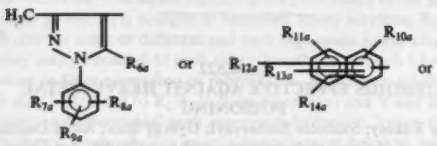
and the other is

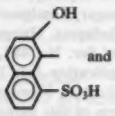


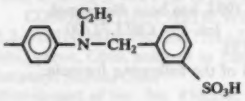
c. one of R_{2a} and R_{3a} is



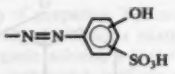
and the other is



(d) R_{2a} is  and R_{3a} is



wherein R_{4a} is hydrogen, hydroxy, sulfo or



R_{5a} is hydroxy, carboxy, amino, N-(C_{1-4}alkyl)amino, N-phenylamino, N,N-di-(C_{1-4}alkyl)amino, N-(C_{1-4}alkyl) N-(C_{1-4}alkyl)phenylamino, N-(C_{1-4}alkyl)-N-benzylamino or N-(C_{1-4}alkyl) N-(C_{1-4}alkyl)phenylsulfamoyl,

each R_{6a} is independently amino or hydroxy,

each R_{7a} and R_{8a} is independently hydrogen, C_{1-4}alkyl, halo or sulfo,

each R_{9a} is independently hydrogen, C_{1-4}alkyl, halo or cyano,

R_{10a} is hydroxy, amino or acetamido,

R_{11a} is hydrogen, carboxy or hydroxy,

R_{12a} is hydrogen, sulfo, C_{1-4}alkyl, C_{1-4}alkylsulfonyl, C_{1-4}alkoxy, C_{1-4}alkylamino, phenylamino, (C_{1-4}alkoxy)-phenylamino or trimethylphenylamino,

each of R_{13a} and R_{14a} is independently hydrogen or sulfo,

each R_{15a} is independently 2-ethylhexyl, butyl, phenyl, (C_{1-4}alkyl)phenyl, (C_{1-4}-alkoxy)phenyl, di-(C_{1-4}alkoxy)phenyl or disulfonaphthyl,

R_{16a} is C_{1-4}alkyl, phenylsulfonyl or (C_{1-4}alkyl)phenylsulfonyl,

R_{18a} is hydrogen or C_{1-4}alkyl,

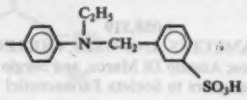
R_{19a} is hydrogen or C_{1-4}alkyl,

R_{20a} is hydrogen, halo, C_{1-4}alkyl or C_{1-4}alkoxy,

R_{21a} is hydrogen or sulfo, and

R_{22a} is 4,6-dichloro-1,3,5-triazinyl-2,2,6-dichloropyrimidyl-4,2,5,6-trichloropyrimidyl-4,4-chloro-6-(4'-sulfo-phenylamino)-1,3,5-triazinyl-2,4-chloro-6-(phenylamino)-1,3,5-triazinyl-2 or 5-chloro-2,6-difluoropyrimidyl-4, and

X is hydrogen or sulfo, with the provisos that (1) the compound contains 1, 2, 3 or 4 sulfo groups, (2) R_{2a} and R_{3a} are different, and (3) X is hydrogen when R_{3a} is



4,058,517

PREPARATION OF A CONCENTRATED SOLUTION OF AN ANIONIC AZO DYE CONTAINING A SULFONIC ACID GROUP

Rudolf Bermes, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 21, 1973, Ser. No. 334,194

Claims priority, application Germany, Feb. 29, 1972, 2209478

Int. Cl.[2] C09B *29/06, 29/10, 29/24, 29/38*

U.S. Cl. 260—155 **8 Claims**

1. In a process for the production of an azo dye by diazotization of a diazo component and coupling with a coupling component, the improvement of directly obtaining a concentrated 10 to 65% by weight solution of a water-soluble mono- or disazo dye substituted by 1 to 4 sulfonic acid groups which comprises:

carrying out the diazotization with a nitrous acid ester of a diol of 3 to 6 carbon atoms or a nitrous acid ester of a glycol ether of 3 to 10 carbon atoms, both the diazotization and the subsequent coupling being carried out directly in the solvent required as the solvent of the concentrated solution, with an amount of said diazo and coupling components sufficient to provide an at least about 10% by weight concentrated solution of the azo dye in the solvent, said solvent consisting essentially of water or a mixture of water with a water-soluble organic solvent selected from the group consisting of a low molecular weight aliphatic amide of 1 to 5 carbon atoms, β-hydroxypropionitrile, butyrolactone, methanol, ethanol, propanol, glycols of 2 to 9 carbon atoms, glycol ethers of 3 to 10 carbon atoms and glycol acetate; and adding to the reaction mixture a compound providing an ammonium cation and being selected from the group consisting of ammonia, alkylamines of 1 to 4 carbon atoms, hydroxylalkylamines of 2 to 3 carbon atoms, hydroxyalkoxyalkylamines of 3 or 4 carbon atoms and alkoxyalkylamines of 3 or 4 carbon atoms.

4,058,518

WATER-INSOLUBLE MONOAZO 3-CYANO-4-METHYL-6-HYDROXY-2-PYRIDINE DYESTUFFS

Ernst Heinrich, Frankfurt am Main, and Joachim Ribka, Offenbach, both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

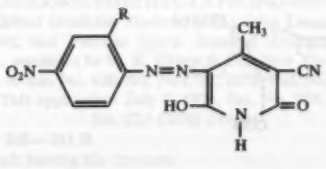
Continuation-in-part of Ser. No. 483,006, June 25, 1974, abandoned, which is a continuation of Ser. No. 331,477, Feb. 12, 1973, abandoned. This application Feb. 19, 1976, Ser. No. 659,205

Claims priority, application Germany, Feb. 18, 1972, 2207661

Int. Cl.[2] C09B *29/36*

U.S. Cl. 260—156 **3 Claims**

1. Monoazo dyestuffs of the formula:



wherein R is alkyl having 1 to 2 carbon atoms.

4,058,519

ADRIAMYCINS AND USES THEREOF

Federico Arcamone; Aurelio Di Marco, and Sergio Penco, all of Milan, Italy, assignors to Societa Farmaceutici Italia S.p.A., Milan, Italy

Filed Mar. 19, 1975, Ser. No. 560,104
Claims priority, application United Kingdom, Mar. 22, 1974, 12783/74
Int. Cl.[2] A61K *31/70;* **C07H** *15/24*
U.S. Cl. 424—180 **7 Claims**

5. A method of inhibiting the growth of a tumor selected from the group consisting of Moloney Sarcoma Virus, Sarcoma 180 Ascites, Solid Sacroma 180, gross transplantable leukemia and L1210 leukemia which comprises administering to a host afflicted with said tumor an amount of a compound selected from the group consisting of 4′-epiadriamycin, α-anomer, 4′-epiadriamycin, β-anomer and mixtures thereof sufficient to inhibit the growth of said tumor.

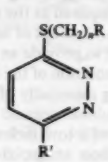
4,058,520

AMINOALKYLTHIOPYRIDAZINE COMPOUNDS

Joseph E. Dunbar, and Louis E. Begin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 7, 1976, Ser. No. 684,224
Int. Cl.[2] C07D *237/18*
U.S. Cl. 260—239 B **7 Claims**

1. A compound corresponding to the formula



and the pharmaceutically acceptable salts thereof wherein R is loweralkylamino, diloweralkylamino or a simple heterocyclic amino radical selected from the group consisting of piperidinyl, and hexamethyleneimino;

R′ is a halogen or an alkylaminoalkylthio group having the formula

$$-S(CH_2)_nR;$$

where *n* is an integer of from 1 to 5 and R is as defined hereinbefore.

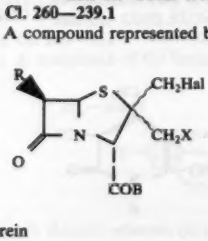
4,058,521

2-HALOMETHYL-2-NUCLEOPHILIC SUBSTITUTED METHYL PENICILLINS

Shoichiro Uyeo, Toyonaka; Tsutomu Aoki, Sennan, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jan. 24, 1977, Ser. No. 762,185
Claims priority, application Japan, Jan. 23, 1976, 51-6960
Int. Cl.[2] C07D *499/44;* **A61K** *31/43*
U.S. Cl. 260—239.1 **1 Claim**

1. A compound represented by the formula:



wherein

1. COB = benzhydryloxycarbonyl, Hal = bromo, R = phenoxyacetamido, and X = acetoxy;
2. COB = 2,2,2-trichloroethoxycarbonyl, Hal = bromo, R = phenylacetamido, and X = acetoxy;
3. COB = benzyloxycarbonyl, Hal = bromo, R = phenoxyacetamido, and X = acetoxy;
4. COB = benzhydryloxycarbonyl, Hal = bromo, R = phenoxyacetamido, and X = chloro;
5. COB = p-methoxybenzyloxycarbonyl, Hal = bromo, R = 1-tetrazolacetamido, and X = chloro;
6. COB = diphenylmethoxycarbonyl, Hal = bromo, R = N-phenylacetyl-N-acetylamino, and X = acetoxy; or
7. COB = carboxy, Hal 32 chloro, R = 2-thienylacetamido, and X = 5-methyl-1,3,4-thiadiazol-2-ylthio.

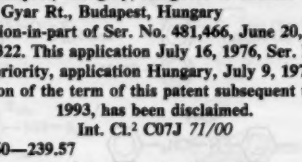
4,058,522

STEROIDS EFFECTIVE AGAINST HEAVY-METAL POISONING

Tibor Kekesy; Szabolcs Szeberenyi; György Beer; Antal Dudas; György Hajos; Laszlo Szporny, and Eva Czajlik, nee Csizer, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 481,466, June 20, 1974, Pat. No. 3,988,322. This application July 16, 1976, Ser. No. 705,815
Claims priority, application Hungary, July 9, 1973, RI 514
The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.
Int. Cl.[2] C07J *71/00*
U.S. Cl. 260—239.57 **6 Claims**

1. A compound of the following formula:



wherein

X_1 is hydrogen or mercapto;

X_2 is mercapto or acetylthio;

X_3 is hydrogen or acetylthio; and

X_4 is hydrogen, acetylthio or X_3 and X_4 together form a valence bond, but if X_3 and X_4 form a valence bond X_2 is mercapto.

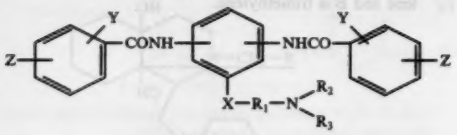
4,058,523

BIS(BENZAMIDO)-BENZENE DERIVATIVES

Takashi Mori, Tama; Sakae Takaku, Ageo; Nobuhiro Oi, Hoya; Minoru Shindo, Tokyo; Takeaki Hirano, Fujimi; Shigeyuki Kataoka, Saitama, and Kouji Furuno, Kokubunji, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 620,216, Oct. 6, 1975, abandoned. This application Sept. 15, 1976, Ser. No. 723,444
Claims priority, application Japan, Oct. 14, 1974, 49-117123; Mar. 24, 1975, 50-34510
Int. Cl.[2] C07D *295/10;* **C07C** *103/78;* **A61K** *31/535, 31/165*
U.S. Cl. 544—165 **54 Claims**

1. A bis(benzamido)-benzene derivative represented by the formula



wherein X is direct bond, oxygen,

or —CONH— wherein the CO moiety is bonded to the phenylene group, R_1 is straight or branched lower alkylene, R_2 and R_3 are the same or different and each represents lower alkyl or they may be bonded to each other directly or through a hetero atom to form piperidino or morpholino, R_4 is lower alkyl and it may be bonded to R_2 R_3 to form piperazino and Y and Z are same or different and each represents hydrogen, lower alkyl, hydrozy, lower alkoxy, lower alkanoyloxy or halogen, and its acid addition salt.

4,058,524

PROCESS OF PREPARING AN AMINO THIAZOLYL DISULFIDE USING A WATER SOLUBLE SALT IN COMBINATION WITH WET 2,2-DITHIOBIS(BENZOTHIAZOLE)

Richard Leshin, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 470,239, May 15, 1974, abandoned. This application Jan. 12, 1976, Ser. No. 648,085
Int. Cl.² C07D *417/12*
U.S. Cl. 544—136 **10 Claims**

1. A process of preparing 2-(4-morpholinodithio)-benzothiazole comprising combining a mixture of morpholine, sulfur, an inert organic solvent, a water soluble salt, and wet 2,2′-dithiobis(benzothiazole) with an aqueous solution of a water soluble oxidizing agent wherein the wet 2,2′-dithiobis (benzothiazole) contains 25 to 186 parts by weight of water per 100 parts by weight of 2,2′-dithiobis(benzothiazole), with the proviso that the maximum water level in the morpholine, sulfur, solvent 2,2′-dithiobis(benzothiazole) mixture, prior to combining the mixture with the oxidizing agent, is 186 parts by weight of water per 100 parts by weight of 2,2′-dithiobis (benzothiazole), and wherein the water soluble salt is present in an amount sufficient to constitute at least 50 percent of the amount of salt necessary to saturate the water content of the wet 2,2′-dithiobis(benzothiazole) at 25° C., wherein the water soluble salt is soluble to the extent of at least 5 parts by weight per 100 parts by weight of water at 25° C. wherein the water soluble salt is a compound other than the oxidizing agent and is incapable of adversely reacting with the oxidizing agent and the 2-(4-morpholinodithio)-benzothiazole.

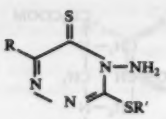
4,058,525

4-AMINO-5-THIONE-1,2,4-TRIAZINES

Wolfgang Hofer; Fritz Maurer; Hans-Jochem Riebel; Lothar Rohe, all of Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 26, 1976, Ser. No. 670,911
Claims priority, application Germany, Apr. 22, 1975, 2517654
Int. Cl.² C07D *253/06*
U.S. Cl. 544—182 **14 Claims**

1. 4-Amino-5-thione-1,2,4-triazine (4,5-H) compound of the formula



in which

R is alkyl of up to 8 carbon atoms; cycloalkyl of 5 to 7 carbon atoms; cycloalkenyl of 5 to 7 carbon atoms; phenyl, which can optionally be mono-substituted or polysubstituted by halogen; or alkoxyalkyl of 1 to 4 carbon atoms per alkyl and alkoxy moiety; and

R′ is hydrogen or alkyl of up to 4 carbon atoms.

4,058,526

TREATMENT OF WASTE WATER FROM THE PREPARATION OF 6-SUBSTITUTED 3-MERCAPTO-4-AMINO-1,2,4-TRIAZINE-5-ONES

Walter Merz, Leverkusen, and Günter Schümmer, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 11, 1976, Ser. No. 685,234
Int. Cl.² C07D *253/06*
U.S. Cl. 544—182 **12 Claims**

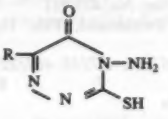
1. In the condensation of thiocarbohydrazide and an aqueous solution of an α-keto carboxylic acid of the formula

R—CO—COOH (I)

in which

R is alkyl of from 1 to 18 carbon atoms, cycloalkyl of from 5 to 6 carbon atoms, aralkyl of from 6 to 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the alkyl moiety, or aryl of from 6 to 10 carbon atoms and such alkyl, cycloalkyl, aralkyl and aryl radical, respectively, which is substituted with at least one substituent selected from the group consisting of halo, nitro, carbo lower alkoxy, lower alkyl, lower alkoxy, aryloxy having 6–10 ring carbon atoms, lower alkylmercapto, arylmercapto having 6–10 ring carbon atoms and aryl-lower alkylmercapto having 6–10 ring carbon atoms in the aryl moiety,

to produce a triazinone of the formula



(II

and waste water, and separating the triazinone from the waste water, the improvement which comrpises treating said waste water, said treatment involving mixing said waste water with a water-immiscible ketone solvent, said ketone being employed in an amount sufficient to form an aqueous phase and a ketone phase, and separating the thus purified waste water aqueous phase from the ketone phase.

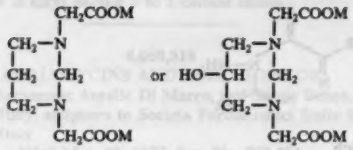
4,058,527

PREPARATION OF N,N′-DICARBOXYMETHYL-1,3-PROPANEDIAMINES

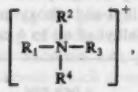
Roger Robert Gaudette, Hudson, N.H.; John Leonard Ohlson, Bedford, and Patricia Marie Scanlon, Arlington, both of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 630,791, Nov. 11, 1975, Pat. No. 3,988,367. This application July 7, 1976, Ser. No. 703,180
Int. Cl.² C07D *239/04*
U.S. Cl. 260—251 R **2 Claims**

1. A salt having the formula



in which M is an alkali metal cation, ½ of an alkaline earth metal cation, or an ammonium ion having the formula



in which each of R_1, R_2, R_3, and R_4 is selected from a group consisting of hydrogen, lower alkyl, or hydroxy lower alkyl.

4,058,528

5-HYDROXYHEXAHYDROPYRIMIDINE

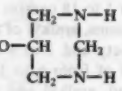
Roger Robert Gaudette, Hudson, N.H.; John Leonard Ohlson, Bedford, and Patricia Marie Scanlon, Arlington, both of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 630,791, Nov. 11, 1975, Pat. No. 3,988,367. This application July 7, 1976, Ser. No. 703,184

Int. Cl.² C07D *239/04*

U.S. Cl. 260—251 R **1 Claim**

1. A compound having the formula



4,058,529

POLYCYCLIC AMINO DERIVATIVES OF PYRROLIDONE AND PIPERIDONE

Wilfried Graf, Binningen, and Erich Schmid, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

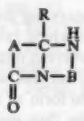
Filed Feb. 2, 1965, Ser. No. 429,911

Claims priority, application Switzerland, Feb. 11, 1964, 1632/64

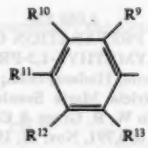
Int. Cl.² C07D *239/10, 487/04, 487/12, 487/22*

U.S. Cl. 260—251 A **5 Claims**

1. A compound of the formula



wherein R is aryl of the formula



each of R^9, R^{10}, R^{11}, R^{12} and R^{13} is a member selected from the group consisting of a hydrogen atom, a chlorine atom, a fluorine atom, a bromine atom, lower alkyl, lower alkoxy, trifluoromethyl and lower alkylthio; A is trimethylene and B is trimethylene.

4,058,530

AMINO ACID ESTERS

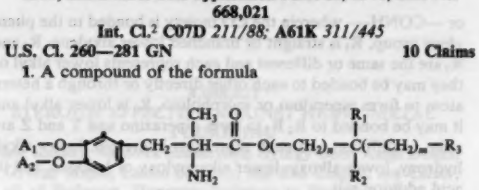
Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 482,102, June 25, 1974, Pat. No. 3,983,138, which is a continuation-in-part of Ser. No. 400,609, Sept. 25, 1973, abandoned. This application Mar. 18, 1976, Ser. No. 668,021

Int. Cl.² C07D *211/88;* A61K *311/445*

U.S. Cl. 260—281 GN **10 Claims**

1. A compound of the formula



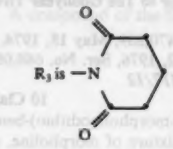
wherein

n is 0, 1, 2 or 3;

m is 0, 1, 2 or 3;

A_1 and A_2 are individually H or a lower alkanoyl group;

R_1 and R_2 are individually H or alkyl of 1 to 3 carbon atoms and;



or a pharmaceutically acceptable acid addition salt thereof.

4,058,531

PROCESS FOR THE PREPARATION OF 14-HYDROXYMORPHINAN DERIVATIVES

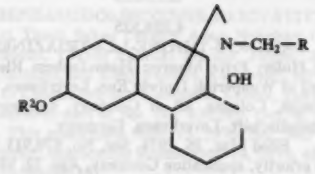
Ivo Monkovic, Candiac; Carol Bachand, Cote Ste-Catherine, and Henry Wong, Candiac, all of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed Mar. 23, 1976, Ser. No. 669,795

Int. Cl.² C07D *221/28, 217/24, 491/08*

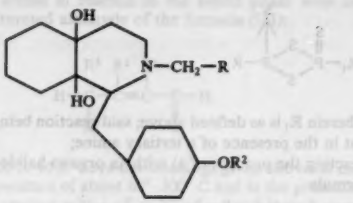
U.S. Cl. 260—285 **3 Claims**

1. The process for the preparation of compounds having the formulas



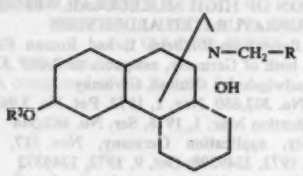
wherein R^2 is H or (lower)alkyl and R is cyclobutyl or cyclopropyl; which process consists of the consecutive steps of

A. treating the compound having the formula



VI

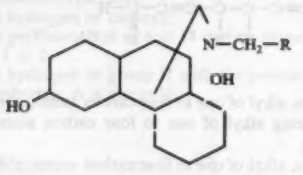
in which R is cyclopropyl or cyclobutyl and R^2 is (lower-)alkyl with borane in a ratio of about one mole of compound VI to 1 to 1.5 moles of borane in the presence of an acid selected from the group consisting of phosphoric, orthophosphoric, pyrophosphoric and polyphosphoric, boron trifluoride etherate and mixtures thereof to produce the compound having the formula



LV

in which R and R^2 are as described above; and

B. cleaving the R^2O-ether function of compound LV by treatment with an agent selected from the group consisting of $NaSC_2H_5$, hydrobromic acid, boron tribromide and pyridine hydrochloride to produce the compound having the formula



LX

in which R is cyclopropyl or cyclobutyl.

4,058,532

1-PHENYL-3,4-DIHYDROCARBOSTYRILS

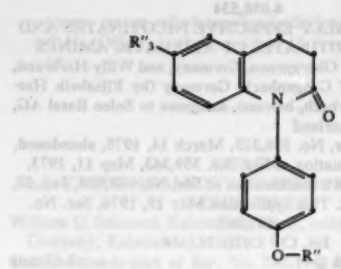
Malcolm R. Bell, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 593,166, July 3, 1975, which is a continuation-in-part of Ser. No. 402,162, Oct. 1, 1973, Pat. No. 3,994,902, which is a division of Ser. No. 156,070, June 23, 1971, Pat. No. 3,819,637. This application May 13, 1976, Ser. No. 686,074

Int. Cl.² C07D *215/22*; A61K *31/47*; C07D *279/10, 395/12*

U.S. Cl. 260—288 R **8 Claims**

1. A compound of the formula



where

R″ is hydrogen, lower-alkyl, benzyl or $C_nH_{2n}NR_4R_5$, where R_4 and R_5 are lower alkyl and *n* is an integer from 2 to 4 inclusive; and

R''_3 is hydrogen or lower-alkoxy.

4,058,533

SUBSTITUTED PYRIDINE CARBOXYLIC ACIDS AND DERIVATIVES

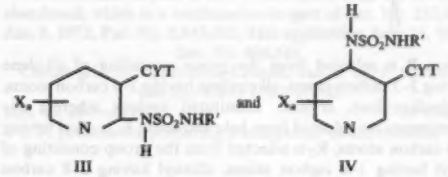
Lennon H. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 676,591, April 13, 1976, Pat. No. 4,014,888, which is a continuation-in-part of Ser. No. 572,024, April 28, 1975, abandoned, which is a division of Ser. No. 412,944, Nov. 5, 1973, Pat. No. 3,920,641. This application Dec. 6, 1976, Ser. No. 747,663

Int. Cl.² C07D *213/55*

U.S. Cl. 260—294.8 F **2 Claims**

1. A compound of the formulae:



III and IV

wherein:

each X independently represents loweralkyl, of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, SR^5, OR^5, aryl wherein aryl is phenyl, halophenyl or tolyl, $—NR^3R^4$, halo or nitro;

n represents an integer of 0 to 3, inclusive;

Y represents oxygen;

T represents a member selected from the group consisting of hydroxy, alkoxy of 1 to 3 carbon atoms;

R′ represents aryl wherein aryl is phenyl, halophenyl, tolyl or benzyl;

each of R^3 and R^4 independently represent hydrogen or loweralkyl of 1 to 6 carbon atoms;

R^5 represents loweralkyl of 1 to 6 carbon atoms.

4,058,534

THERAPEUTICALLY EFFECTIVE NICOTINATES AND N-OXIDE NICOTINATES OF ALIPHATIC AMINES

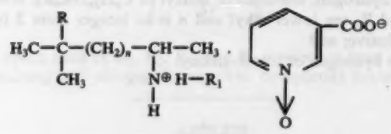
Karl-Heinz Jaeger, Oberggenen, Germany, and Willy Herbrand, deceased, late of Gengenbach, Germany (by Elisabeth Herbrand nee Lauterbach, heiress), assignors to Solco Basel AG, Birsfelden, Switzerland

Continuation of Ser. No. 558,325, March 14, 1975, abandoned, which is a continuation of Ser. No. 359,363, May 11, 1973, abandoned, which is a continuation of Ser. No. 109,980, Jan. 26, 1971, abandoned. This application May 19, 1976, Ser. No. 687,765

Int. Cl.[2] C07D *213/54*

U.S. Cl. 260—295.5 S 3 Claims

1. A nicotinate N-oxide salt having the following structure



wherein R is hydrogen, or a hydroxyl or thiol group, R_1 is hydrogen or a C_1 or C_2 alkyl group, and *n* is a whole number from 1 to 4.

4,058,535

PROCESS FOR MANUFACTURING PHOSPHONO IMIDATES

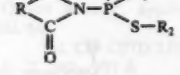
Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 468,333, May 9, 1974, abandoned, which is a continuation of Ser. No. 323,590, Jan. 15, 1973, abandoned. This application July 24, 1975, Ser. No. 598,906

Int. Cl.[2] C07D *209/02, 277/38;* A01N *9/36*

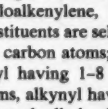
U.S. Cl. 260—326 E 2 Claims

1. A process for manufacturing a compound having the formula:

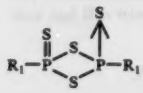


where R is selected from the group consisting of alkylene having 2–3 carbon atoms, alkenylene having 2–3 carbon atoms, cycloalkenylene, arylene, substituted arylene wherein the substituents are selected from halo and nitro; R_1 is alkyl having 1–6 carbon atoms; R_2 is selected from the group consisting of alkyl having 1–8 carbon atoms, alkenyl having 2–8 carbon atoms, alkynyl having 2–8 carbon atoms, cyano alkyl, aralkyl, alkanoyl alkyl, alkylmercapto alkyl, N-thiazoyl acetamido, phthalimido alkyl, arylthioalkyl, haloarylthioalkyl and thiocyanoalkyl; comprising the steps of:

a. reacting a compound having the formula:



wherein R is as defined above; with a compound having the following generic formula:



wherein R_1 is as defined above; said reaction being carried out in the presence of a tertiary amine;

b. reacting the product of a) with an organo halide with the formula

$R_2—X$

wherein X is selected from chlorine, bromine and iodine, and R_2 is as defined above and in the presence of an inert solvent and at a reaction temperature of between 20° C. and 70° C. to form the end product.

4,058,536

PRODUCTION OF HIGH MOLECULAR WEIGHT α,β-UNSATURATED ALDEHYDES

Norbert Goetz, Bobenheim-Roxheim 1, and Roman Fischer, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Division of Ser. No. 302,650, Nov. 1, 1972, Pat. No. 3,965,193. This application Mar. 1, 1976, Ser. No. 662,346

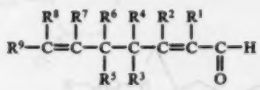
Claims priority, application Germany, Nov. 17, 1971, 2157035; Oct. 9, 1972, 2249398; Oct. 9, 1972, 2249372

The portion of the term of this patent subsequent to June 22, 1993, has been disclaimed.

Int. Cl.[2] C07D *319/04*

U.S. Cl. 260—340.7 11 Claims

1. A process for the production of high molecular weight α,'-unsaturated aldehydes of the general formula (I):



(I)

where

R^1 is hydrogen, alkyl of one to four carbon atoms, phenyl or phenyl bearing alkyl of one to four carbon atoms as a substituent;

R^2 is hydrogen, alkyl of one to four carbon atoms, phenyl or phenyl bearing alkyl of one to four carbon atoms as a substituent;

R^3 is hydrogen or alkyl of one to four carbon atoms;

R^5 is hydrogen or alkyl of one to four carbon atoms;

R^6 is hydrogen or alkyl of one to four carbon atoms;

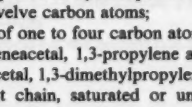
R^7 is hydrogen or alkyl of one to four carbon atoms;

R^4 is hydrogen or a saturated or unsaturated, branched or linear aliphatic or cycloaliphatic hydrocarbon radical of one to twelve carbon atoms;

R^8 is alkyl of one to four carbon atoms or hydrogen; and

R^9 is ethyleneacetal, 1,3-propylene acetal, 2,2-dimethylpropylene acetal, 1,3-dimethylpropylene acetal, diethylacetal, a straight chain, saturated or unsaturated hydrocarbyl ether group having a total of up to 12 carbon atoms and the ether oxygen between carbon atoms of said group or CH_3COOCH_2—,

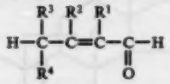
wherein an allyl compound of the formula (II):



(II)

in which R^5 to R^9 have the meanings given above and R^{10} is hydrogen or acyl or a carboxylic acid of one to five car-

bon atoms in reacted in the liquid phase with an α,β-unsaturated aldehyde of the formula (III):



(III)

in which R^1 to R^4 have the meanings given above, at elevated temperature of about 60°–300° C and in the presence of an acid catalyst with a pK value of −9 to 6 in such an amount of such acid catalyst that the reaction mixture has a pH of 1 to 7.

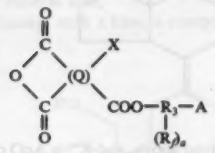
4,058,537

ESTERS OF ANHYDRIDE AROMATIC POLYCARBOXYLIC ACIDS WITH PERFLUOROALKYL ALCOHOLS

Karl Friedrich Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 5, 1976, Ser. No. 646,689
Int. Cl.² C07D 307/89
U.S. Cl. 260—346.3 **18 Claims**

1. A compound of the formula I



(I)

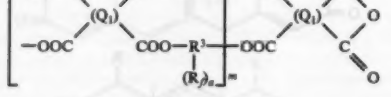
wherein Q is the tetraradical of a tricarboxylic or tetracarboxylic acid selected from the group consisting of trimellitic acid, 3,3′,4,4′-benzophenonetetracarboxylic acid and 1,2,4,5-benzenetetracarboxylic acid,

X is hydrogen or carboxy;

R_f is perfluoroalkyl of 6 to 18 carbon atoms;

a is 1 or 2;

A is hydrogen or group II with the proviso that when X is hydrogen, A is group II;

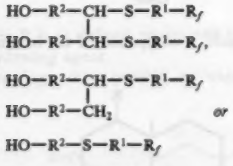


(II);

m is 0;

Q_1 is the same as Q, and

R^3 is the residue of an R_f-substituted aliphatic alcohol or diol of the structure



where R^1 is a branched or straight chain alkylene of 1 to 12 carbon atoms, alkylenethioalkylene of 4 to 12 carbon atoms, alkyleneoxyalkylene of 4 to 12 carbon atoms or alkyleneiminoalkylene of 4 to 12 carbon atoms where the nitrogen atom contains as the third substituent hydrogen or alkyl of 1 to 6 carbon atoms; and

R^2 is straight or branched chain alkylene of 1 to 12 carbon atoms or an alkylenepolyoxyalkylene of the formula $C_nH_{2n}(OC_kH_{2k})_r$, where n is 1 to 12, k is 2 to 6 and r is 1 to 40.

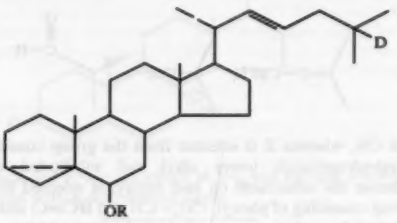
4,058,538

3α,5α-CYCLO-6β-ALKOXY-α²²-BIS-NOR CHOLESTENE DERIVATIVES

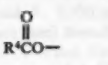
William G. Salmond, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 544,174, Jan. 27, 1975, Pat. No. 3,994,934. This application July 26, 1976, Ser. No. 708,821
Int. Cl.² C07J 5/00
U.S. Cl. 260—397.2 **4 Claims**

1. A compound of the formula



wherein R is alkyl of one to six carbon atoms, inclusive, and D is selected from the group consisting of 0^- and



wherein R^4 is selected from the group consisting of alkyl of one to six carbon atoms, inclusive, phenyl, benzyl and phenethyl.

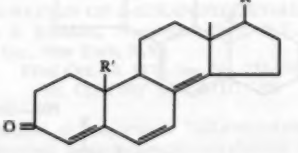
4,058,539

4,6,8(14)-TRIENE STEROIDS

Gunther Kruger, St. Laurent, Canada, assignor to Steele Chemicals Co. Ltd., Pointe Claire, Canada

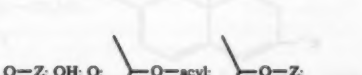
Continuation-in-part of Ser. No. 497,691, Aug. 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 215,669, Jan. 5, 1972, Pat. No. 3,849,402. This application June 16, 1976, Ser. No. 696,616
Claims priority, application Canada, Jan. 6, 1971, 102448
Int. Cl.² C07J 1/00, 21/00
U.S. Cl. 260—397.45 **33 Claims**

1. A process for preparing a compound of the formula



(I)

wherein R is selected from the group consisting of: O-acyl;



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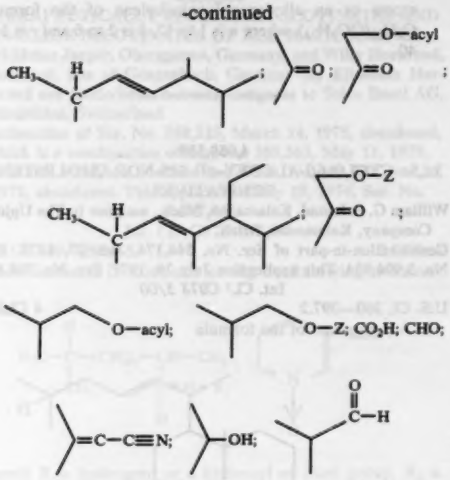
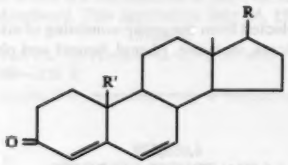
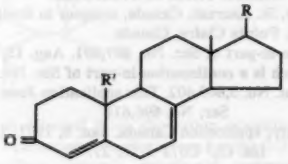


and CN, wherein Z is selected from the group consisting of tetrahydropyranyl, lower alkyl and substituted methyl, wherein the substituent on said methyl is selected from the group consisting of phenyl, $CH_2=CH$ and $HC\equiv C$; and acyl is selected from the group consisting of acetate, tri-lower-alkyl acetate, monohalo acetate and trihalo acetate; and R′ is selected from the group consisting of: CH_3; CH_2OH; $CH_2—O—CO—NH—C(CH_3)_3$; CH_2OCOCH_3; CHO and H, which process is selected from the group consisting of

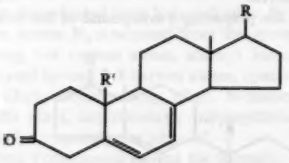
a. treating, with a base, a compound chosen from



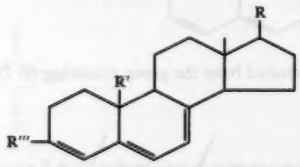
(II);



(III);



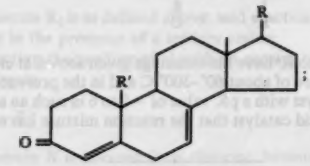
(IV);



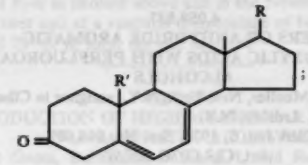
(V);

wherein R and R′ are as defined above and R‴ is AcO; and treating the resulting basic mixture with a dehydrogenating agent and a weak acid;

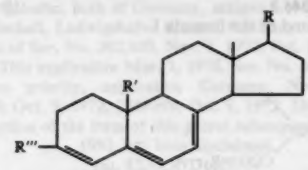
b. reacting, with a dehydrogenating agent, a compound chosen from



(III)



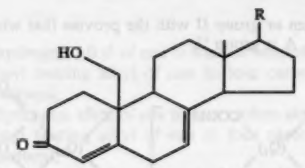
(IV)



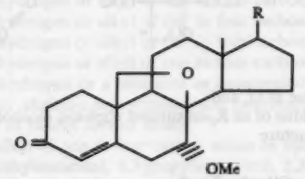
(V)

wherein R and R′ are as defined above, and R‴ is AcO or OH;

c. treating, with ferric chloride and methanol, a compound of the formula (VI), and treating the intermediate obtained, of the formula (VII), with a strong mineral acid wherein R is as defined above and said compounds (VI) and (VII) have the formula

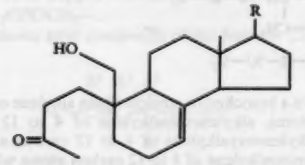


(VI)



(VII)

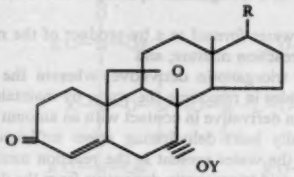
d. treating, with a peracid, a compound of the formula



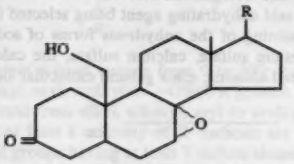
(VI)

wherein R is as defined above, to form a mixture of compounds having the formula

(VII)



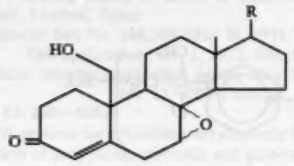
(VIII)



wherein R is as defined above and Y is hydrogen, and if desired separating from said mixture the 7-hydroxy compound and acetylating, if desired, said 7-hydroxy compound to form a corresponding 7-acetoxy compound, reacting said mixture, said 7-hydroxy compound or said 7-acetoxy compound with a strong mineral acid;

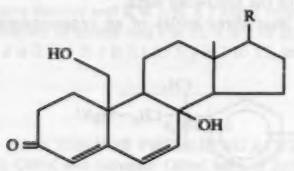
e. treating, with a base, a compound of the formula

(VIII)

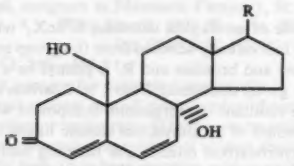


wherein R is as defined above, to form a mixture of compounds of the formula

(IX)



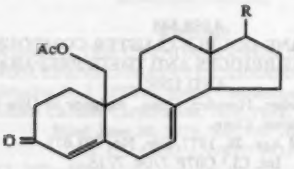
(X)



wherein R is as defined above, and treating said mixture with a dehydrating agent;

f. reacting, with a peracid, a compound of the formula

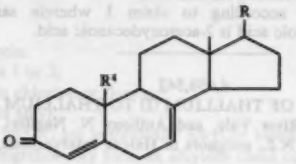
(XI)



wherein R is as defined above, and treating the intermediate obtained with a base, and subsequently dehydrating the resulting compound of formula (X); and

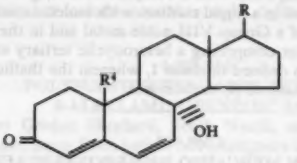
g. reacting, with a peracid, a compound of the formula

(XIII)



wherein R is as defined above and R^4 is chosen from H; CH_3; and CH_2—O—CO—NH—$C(CH_3)_3$, reacting the intermediate obtained with a base to form a compound of the formula

(XV)



wherein R and R^4 are as defined above, and treating the latter compound with a dehydrating agent.

4,058,540

PREPARATION OF 2-ALKANOYLOXYALKANOIC ACIDS

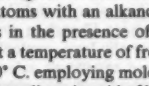
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,633

Int. Cl.[2] C09F 5/00; C11C 3/00

U.S. Cl. 260—405 **11 Claims**

1. A method of preparing a 2-alkanoyloxyalkanoic acid which comprises contacting a nitroalkylnitrate or a nitroalcohol or mixtures thereof corresponding to the formula:



where X is NO_2 or hydrogen and where R is an alkyl group of from 1 to 50 carbon atoms with an alkanoic acid having from 2 to 20 carbon atoms in the presence of calcium oxide or a calcium carboxylate at a temperature of from above about 100° C. and up to about 200° C. employing mole ratios of nitroalkylnitrate or nitroalcohol to alkanoic acid of between 1:1 and 1:10.

10. A method according to claim 1 wherein said 2-alkanoyloxyalkanoic acid is 2-acetoxydecanoic acid.

4,058,541

PREPARATION OF 2-ALKANOYLOXY-ALKANOIC

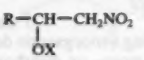
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,634

Int. Cl.[2] C09F 5/00; C11C 3/00

U.S. Cl. 260—405 **9 Claims**

1. A method of preparing a 2-alkanoyloxyalkanoic acid which comprises contacting a nitroalkylnitrate or a nitroalcohol or mixtures thereof corresponding to the formula:



where X is NO_2 or hydrogen and where R is an alkyl group of from 1 to 50 carbon atoms with an alkanoic acid having from

2 to 20 carbon atoms in the presence of sulfuric acid at a temperature of from above about 100° C. and up to about 200° C. employing mole ratios of nitroalkylnitrate or nitroalcohol to alkanoic acid of between 1:1 and 1:10.

8. A method according to claim 1 wherein said 2-alkanoyloxyalkanoic acid is 2-acetoxydecanoic acid.

4,058,542

CONVERSION OF THALLIUM (I) TO THALLIUM (III)

Nabil Rizkalla, River Vale, and Anthony N. Naglieri, Pine Brook, both of N.J., assignors to Halcon International, Inc., New York, N.Y.

Filed Nov. 8, 1976, Ser. No. 740,148
Int. Cl.² C01G 15/00
U.S. Cl. 260—429 R 5 Claims

1. A process for converting a thallium (I) compound to a thallium (III) compound which comprises reacting the thallium (I) compound in a liquid medium with molecular oxygen in the presence of a Group VIII noble metal and in the presence of a promoter comprising a heterocyclic tertiary amine.

5. A process as defined in claim 1, wherein the thallium (I) compound is a thallium (I) carboxylate.

4,058,543

ORGANOTIN MERCAPTO DICARBOXYLIC ACID ESTERS AND COMPOSITIONS

Gerry P. Mack, 34-28 86 St., Jackson Heights, N.Y. 11372

Filed Jan. 2, 1976, Ser. No. 646,310
Int. Cl.² C08K 5/58, 5/36
U.S. Cl. 260—45.75 S 47 Claims

1. An organotin mercapto dicarboxylic acid mixed monohydric and polyhydric alcohol ester having per tin atom one or two alkyl, cycloalkyl or alkylcycloalkyl groups attached to tin through carbon; the alkyl having from 1 to about 12 carbon atoms, the cycloalkyl having from 3 to about 12 carbon atoms, and the alkyl cycloalkyl having from 4 to about 12 carbon atoms; and 2 or 3 mercapto dicarboxylic acid ester groups attached to tin through sulfur, the mercapto dicarboxylic acid having from about four to about 24 carbon atoms, and having at least one esterifying group selected from the group consisting of alkyl, cycloalkyl, and alkylcycloalkyl, the alkyl having from 1 to about 12 carbon atoms, the cycloalkyl having from 3 to about 12 carbon atoms, and the alkyl cycloalkyl having from 4 to about 12 carbon atoms and at least one esterifying group selected from the group consisting of bivalent alkylene, cycloalkylene and alkylenecycloalkyl, the alkylene having from about 2 to about 12 carbon atoms, the cycloalkylene having from 3 to about 12 carbon atoms, and the alkylenecycloalkylene having from 4 to about 12 carbon atoms, each of the two valences of the bivalent alkylene, cycloalkylene and alkylcycloalkylene being linked to groups selected from the group consisting of one hydroxyl and one carboxylic acid group of mercapto dicarboxylic acid; and two carboxylic acid groups of mercapto dicarboxylic acid.

18. A halogen-containing polymer selected from the group consisting of homopolymers and copolymers of vinyl chloride and chlorinated polymers of vinyl chloride and comprising a stabilizing amount of an organotin mercapto dicarboxylic acid ester of claim 1.

4,058,544

NOVEL METHOD FOR PREPARING ORGANOTIN COMPOUNDS

Bernard G. Kushlefsky, Edison, N.J., assignor to M&T Chemicals Inc., Greenwich, Conn.

Filed Dec. 6, 1974, Ser. No. 530,356
Int. Cl.² C07F 7/22
U.S. Cl. 260—429.7 7 Claims

1. In an improved method for preparing a triorganotin derivative of an ethylenically unsaturated mono- or dicarboxylic acid containing between 3 and 20 atoms, the method consisting essentially of

1. reacting said mono- or dicarboxylic acid with a stoichiometric amount of a triorganotin hydroxide or a bis(triorganotin)oxide;
2. removing the water formed as a by-product of the reaction from the reaction mixture; and
3. isolating said triorganotin derivative, wherein the improvement resides in removing the water by maintaining the triorganotin derivative in contact with an amount of a solid, chemically inert dehydrating agent sufficient to remove all of the water present in the reaction mixture, and separating said triorganotin derivative from the dehydrating agent, said dehydrating agent being selected from the group consisting of the anhydrous forms of sodium sulfate, magnesium sulfate, calcium sulfate, the calcium halides, activated alumina, silica gel and molecular sieves.

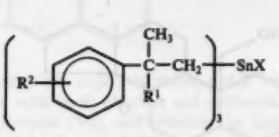
4,058,545

METHOD FOR PREPARING TRI(β-SUBSTITUTED PHENETHYL)TIN HALIDES

Melvin H. Gitlitz, Edison, N.J., assignor to M&T Chemicals Inc., Greenwich, Conn.

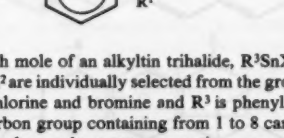
Filed Aug. 3, 1976, Ser. No. 711,202
Int. Cl.² C07F 7/22
U.S. Cl. 260—429.7 5 Claims

1. A method for preparing a triorganotin halide of the general formula



wherein R^1 represents hydrogen or methyl, R^2 is selected from the group consisting of hydrogen, alkyl contaning from 1 to 6 carbon atoms and X is chlorine or bromine, said method consisting essentially of the following steps:

1. Reacting at least three moles of an organomagnesium halide,



with each mole of an alkyltin trihalide, $R^3SnX_3^2$ wherein X^1 and X^2 are individually selected from the group consisting of chlorine and bromine and R^3 is phenyl or a linear hydrocarbon group containing from 1 to 8 carbon atoms;
2. Reacting the resultant tetraorganotin compound with an equimolar amount of an anhydrous stannic halide, SnX_4, in a liquid hydrocarbon diluent and isolating said triorganotin compound by combining the reaction mixture with water or a dilute aqueous acid solution.

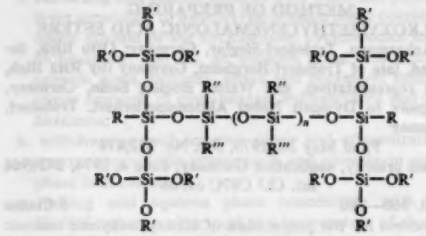
4,058,546

ALKOXYSILANE DOUBLE CLUSTER COMPOUNDS WITH SILICONE BRIDGES AND THEIR PREPARATION AND USE

Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 28, 1977, Ser. No. 791,671
Int. Cl.² C07F 7/04, 7/18
U.S. Cl. 260—448.8 R 18 Claims

1. A compound having the formula:



wherein n is an integer from 0 to 300; R is hydrogen, alkyl, alkenyl, aryl, aralkyl or —OSi(OR')$_3$; each R' is independently selected from alkyl, alkenyl, aryl or aralkyl with the proviso that at least a majority of R' radicals are sterically hindered alkyl groups having at least 3 carbon atoms; and R'' and ''' are independently selected from hydrogen, alkyl, alkenyl, aryl, aralkyl, hydroalkyl, and halo or cyano substituted alkyl, alkenyl, aryl, aralkyl, and hydroalkyl.

4,058,547

CATALYTIC PROCESS FOR THE PRODUCTION OF ACRYLONITRILE

Tatsuo Shiraishi; Shinkichi Shimizu, and Hiroshi Ichihashi, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Division of Ser. No. 148,165, May 28, 1971, Pat. No. 3,746,656. This application Nov. 1, 1972, Ser. No. 302,882
Claims priority, application Japan, May 29, 1970, 45-46667
Int. Cl.[2] C07C *120/14*
U.S. Cl. 260—465.3 **29 Claims**

1. A process for producing acrylonitrile by the vapor phase reaction of propylene, ammonia and gaseous oxygen at a temperature from about 300° to about 520° C., which comprises contacting propylene, ammonia and gaseous oxygen with a catalyst composition comprising a catalyst system of the formula: $Tl_aP_bMo_cFe_dBi_eX_fO_g$ wherein X is Ni, Mg or Co or mixtures thereof and a, b, c, d, e, f and g represent respectively, the number of atoms and c is 12, a is 2 or less, but not 0; b is 0 to 5; d is 0.1 to 5; e is 0.1 to 5; f is 2 to 15; and g is from 38.3 to 81.5.

4,058,548

PROCESS FOR PREPARING ACETONITRILE

Gisela Olivé, and Salvador Olivé, both of Zollikerberg, Switzerland, assignors to Monsanto Company, St. Louis, Mo.

Filed June 3, 1976, Ser. No. 692,630
Int. Cl.[2] C07C *120/00*
U.S. Cl. 260—465.1 **24 Claims**

1. A process for preparing acetonitrile by contacting hydrogen and at least one of methylamine, dimethylamine and trimethylamine molar ratio of hydrogen to amine of at least 0.5 to 1 at an elevated temperature of at least about 300° C and sufficiently high to induce reaction with a catalytically effective amount of catalyst comprising a transition metal in a reduced valence state which renders it effective toward synthesis of acetonitrile, at a space velocity of about 50 to about 2000 reciprocal hours, and recovering acetonitrile.

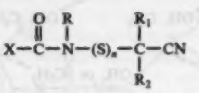
4,058,549

N-SUBSTITUTED CYANOALKANE-SULFENYL (AND THIOSULFENYL)-N-ALKYL CARBAMOYL HALIDES

Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 30, 1976, Ser. No. 701,166
Int. Cl.[2] C07C *121/417, 121/46*
U.S. Cl. 260—465.4 **11 Claims**

1. A compound of the formula:



wherein:
n is 1 or 2;
X is chlorine or fluorine;
R is alkyl;
R_1 and R_2 are individually alkyl or haloalkyl or R_1 and R_2 together may form an alkylene chain completing either a substituted or unsubstituted cyclopentyl, cyclohexyl or either a 6, 7 or 8 membered bicycloalkyl ring wherein the permissible substituents are one or more chloro, fluoro, bromo, alkyl or haloalkyl substituents;
with the proviso that R, R_1, and R_2 substituents individually may not include more than eight aliphatic carbon atoms.

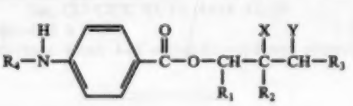
4,058,550

POLYSUBSTITUTED-ALKYL ESTERS OF 4-ALKYLAMINOBENZOIC ACIDS

Robert Gordon Shepherd, South Nyack, and Thomas Gary Miner, Sugar Loaf, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 28, 1975, Ser. No. 625,989
Int. Cl.[2] C07C *101/00*
U.S. Cl. 560—43 **9 Claims**

1. A compound of the formula:



wherein R_4 is an unbranched or branched alkyl group, C_nH_{2n+1} wherein n is 8 to 19; R_1, R_2 and R_3 are selected from the group consisting of hydrogen, C_1–C_3 alkyl, and C_1–C_3 hydroxyalkylene; X and Y, which may be the same or different, are selected from the group consisting of hydrogen, hydroxy, lower alkanoyloxy, hydroxymethyl, and when taken together X and Y can comprise a carbon-carbon bond; wherein the 4-alkylaminobenzoyloxy moiety and X may be interchanged; with the proviso that when R_1, R_2 and R_3 are all hydrogen or C_1–C_3 alkyl, then X and Y may not both be hydrogen; and the pharmaceutically acceptable salts thereof.

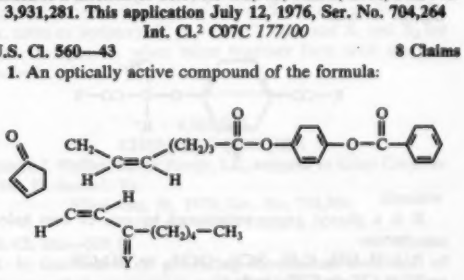
4,058,551

SUBSTITUTED PHENYL ESTERS OF PGA_2

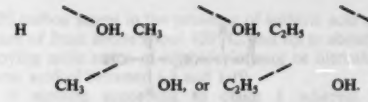
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 531,991, Dec. 12, 1974, abandoned, which is a division of Ser. No. 431,598, Jan. 8, 1974, Pat. No. 3,931,281. This application July 12, 1976, Ser. No. 704,264
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—43 **8 Claims**

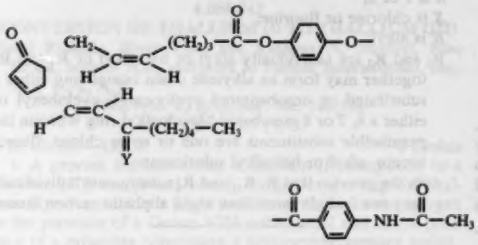
1. An optically active compound of the formula:



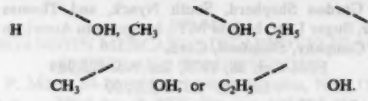
or a racemic compound of that formula and the mirror image thereof, wherein Y is



5. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein Y is



4,058,552

ESTERS OF P-CARBONYLPHENOXY-ISOBUTYRIC ACIDS

Andre Mieville, Lausanne, Switzerland, assignor to Orchimed SA, Switzerland

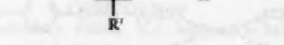
Continuation-in-part of Ser. No. 326,188, Jan. 24, 1973, Pat. No. 3,907,792, which is a continuation-in-part of Ser. No. 8,071, Feb. 2, 1970, Pat. No. 3,914,286. This application July 29, 1975, Ser. No. 600,127

Claims priority, application Switzerland, Jan. 31, 1969, 1517/69; Aug. 28, 1969, 13022/69

Int. Cl.² C07C *69/76*

U.S. Cl. 560—52 **6 Claims**

1. A novel ester of p-carbonylphenoxy-isobutyric acid having the formula



wherein

R is a phenyl group substituted by one or two halogen atoms;

R′ is H, CH_3, C_6H_5, SCH_3, OCH_3, or, SO_2CH_3;

R″ is CH_3 or C_2H_5; and

Y is C_1-C_4 alkoxy, phenoxy, phenoxy substituted by one or two halogen atoms, or, OCH_2O–CO–C $(CH_3)_3$.

4,058,553

METHOD OF PREPARING ALKOXYMETHYLENEMALONIC ACID ESTERS

Otto Ackermann, Troisdorf-Sieglar, Germany; Otto Bleh, deceased, late of Troisdorf-Bergheim, Germany (by Rita Bleh, legal representative), and Walter Rogler, Bonn, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed May 30, 1975, Ser. No. 582,474

Claims priority, application Germany, June 4, 1974, 2426964

Int. Cl.² C07C *69/66*

U.S. Cl. 560—180 **5 Claims**

1. Process for the preparation of alkoxymethylene malonic acid ester by the reaction of malonic acid ester with orthoformic acid trialkyl ester, characterized in that malonic acid ester is contacted with the ortho ester in the presence of at least one of carboxylic acid and carboxylic acid anhydride, and a Lewis acid at 100°–160° C for a time sufficient for formation of the alkoxymethylene melonic acid ester, wherein the amount of ortho ester present at the beginning of the reaction is at least 1.4 moles thereof per mol of the malonic acid ester starting material, and wherein alcohol formed during the reaction is removed during the reaction.

4,058,554

NOVEL ESTER DERIVATIVES OF ETHER POLYCARBOXYLIC ACIDS AND PROCESS FOR MAKING SAME

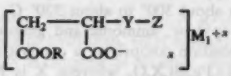
Eddie N. Gutierrez, Fort Lee, and Vincent Lamberti, Upper Saddle River, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 22, 1975, Ser. No. 642,838

Int. Cl.² C07C *69/66*

U.S. Cl. 560—180 **3 Claims**

1. A compound of the general formula



wherein R is a primary alkyl group of one to six carbon atoms,

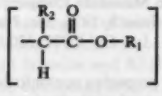
wherein M_1 is H, Ca, Mg, Ba, Sr, Na, K or Li,

wherein x is 1 or 2 and is equivalent to the valency of M_1,

wherein Y is oxygen, and

wherein Z is

1. an ester moiety of the general formula:



wherein R_1 is isopropyl or secondary butyl, and

wherein R_2 is hydrogen, methyl or ethyl.

4,058,555

PROCESS FOR THE PURIFICATION OF MIXED ACIDS

Samuel S. Mims, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed July 18, 1969, Ser. No. 843,028

Int. Cl.² C07C *69/40, 69/42, 69/44*

U.S. Cl. 560—191 **8 Claims**

1. In a process for the separation and recovery of components contained in the reactor effluent resulting from the air oxidation of cyclohexane, said reactor effluent comprising cyclohexanol, cyclohexanone, unreacted cyclohexane, monobasic aliphatic organic acids, dibasic aliphatic organic acids, oxygenated monobasic aliphatic organic acids, lactones, esters and polymeric esters; the improved steps comprising:

a. extracting said reactor effluent with water and permitting layer separation to form, (1) an organic phase containing a major amount of the cyclohexane, cyclohexanol and cyclohexanone, and (2), an aqueous phase containing the organic acids, lactones, esters and polymeric esters and minor amounts of cyclohexane, cyclohexanol and cyclohexanone;

b. withdrawing said aqueous phase and concentrating to remove the volatile components and provide an aqueous phase concentrate;

c. mixing said aqueous phase concentrate with about 30–60% aqueous nitric acid at a temperature of about 30° to 60° C. to initiate oxidation and hydrolyze any hydrolyzable materials present and provide an aqueous concentrate/nitric acid resulting mixture;

d. reacting the aqueous phase concentrate/nitric acid resulting mixture at a temperature of about 75° to 125° C. to oxidize the remaining oxidizable components present;

e. contacting the resulting mixture in cooled condition with a substantially water-miscible lower alkyl alcohol to form an alcoholic mixture in which esters are formed of the aliphatic organic acids present;

f. simultaneously contacting said alcoholic mixture with a water-immiscible extractant organic solvent under conditions of intimate contact to extract the esters formed into an organic phase with the extractant solvent and form an organic phase and an aqueous phase; said organic solvent comprising an aromatic hydrocarbon, a halogenated aliphatic hydrocarbon, a halogenated aromatic hydrocarbon or mixture thereof;

g. withdrawing and separating said organic phase and said aqueous phase;

h. stripping said aqueous phase to remove any alcohol present, and

i. distilling said organic phase to recover the alkyl esters.

4,058,556

PROCESS FOR THE PREPARATION OF ACETOXYBUTANAL

Christian Rasp, Cologne; Gerhard Scharfe, and Johann Grolig, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 18, 1975, Ser. No. 588,079

Claims priority, application Germany, June 22, 1974, 2430082

Int. Cl.[2] C07C *67/28*

U.S. Cl. 560—231 **8 Claims**

1. In a process for the preparation of acetoxybutanal by reaction of allyl acetate with carbon monoxide and hydrogen under pressure and at elevated temperature, in the presence of a cobalt carbonyl compound and a solvent, the improvement which comprises, the reaction being carried out at 130° to 180° C and at concentrations of allyl acetate of less than 20% by weight, relative to the liquid phase, substantially throughout the reaction.

4,058,557

AMIDINOUREAS

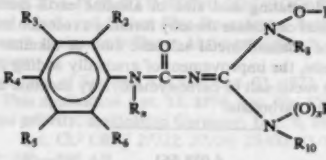
George Henry Douglas, Malvern; William Lyon Studt, Harleysville, and Stuart Alan Dodson, Lansdale, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Mar. 30, 1976, Ser. No. 671,763

Int. Cl.[2] C07C *127/19;* A61K *31/155, 31/17;* C07C *129/12*

U.S. Cl. 260—501.14 **33 Claims**

1. A compound of the formula:



where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are: hydrogen, halo, loweralkyl, halologeralkyl, nitro, amino, acylamino, hydroxy, aralkyloxy or loweralkoxy;

R_n is nitrogen or loweralkyl;

R_7, R_8, R_9 and R_{10} may be the same or different and are: hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl or aralkyl;

px is 0–1;

the sum total of carbon atoms present in R_7, R_8, R_9 and R_{10} together is less than 12; and

the non-toxic acid addition salts thereof.

4,058,558

AROMATIC KETO ACIDS AND DERIVATIVES HAVING ANALGETIC, ANTIINFLAMMATORY, AND HYPOCHOLESTEROLEMIZING ACTION

Henri Cousse; Gilbert Mouzin, and Jean-Pierre Rieu, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

Filed Mar. 21, 1975, Ser. No. 560,946

Claims priority, application France, Feb. 17, 1975, 75.04912

Int. Cl.[2] C07C *63/33;* A61K *31/19*

U.S. Cl. 260—515 A **1 Claim**

1. 2-methylene 4-oxo 4-(4'-orthochlorophenyl phenyl) butyric acid.

4,058,559

4-AROYL-SUBSTITUTED PHENOXY ACETIC ACIDS

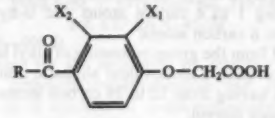
Peter Hadley Jones, Lake Forest, Ill.; Dilbagh Singh Bariana, Cote St. Luc; Anthony Kei Lun Fung, Pierrefonds, both of Canada; Yvonne Connolly Martin, Waukegan, Ill.; Jaroslav Kyncl, Lake Bluff, Ill., and Amrit Lall, Libertyville, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sept. 24, 1975, Ser. No. 616,220

Int. Cl.[2] C07C *63/33, 63/337, 65/14*

U.S. Cl. 260—520 C **14 Claims**

1. A compound of the formula



wherein R is a phenyl ring, naphthyl or a substituted phenyl ring where the substituents are loweralkyl, halogen, loweralkoxy, nitro or hydroxy; R_1 is $-CH_2COOH$; and X_1 and X_2 are each a halogen, or when taken together form with the two attached carbons a phenyl ring.

4,058,560

CHEMICAL PROCESS

Thomas J. Walter, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 30, 1976, Ser. No. 718,954

Int. Cl.[2] C07C *59/22*

U.S. Cl. 260—535 P **9 Claims**

1. In the method of producing the trialkali metal salt of carboxymethyloxy succinic acid by reacting in an aqueous medium, maleic acid and glycolic acid under basic conditions in the presence of zinc or alkaline earth metal ions to produce

a zinc or alkaline earth metal salt of carboxymethyloxy succinic acid and treating said zinc or alkaline earth metal salt with alkali metal carbonate thereby forming a reaction mixture containing the trialkali metal salt and zinc or alkaline earth metal carbonate, the improvement of gradually adding zinc or alkaline earth metal salt of carboxymethyloxy succinic acid to the alkali metal carbonate.

4,058,561
2-CHLOROMETHYLPHENYLCARBAMIC ACID FLUORIDE

Erich Klauke, Odenthal, and Horst Jäger, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 23, 1976, Ser. No. 651,995
Claims priority, application Germany, Feb. 12, 1975, 2505714
Int. Cl.² C07C *101/44, 63/52*
U.S. Cl. 260—544 C **1 Claim**

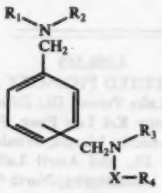
1. 2-chloromethylphenylcarbamic acid fluoride.

4,058,562
ANTIVIRAL SUBSTITUTED (PHENYLENEDIMETHYLENE) DIAMINES

Kenneth Richardson, Canterbury, England, assignor to Pfizer Inc., N.Y.

Division of Ser. No. 611,856, Sept. 10, 1975, Pat. No. 4,003,929, which is a continuation-in-part of Ser. No. 543,824, June 11, 1975, abandoned. This application Sept. 3, 1976, Ser. No. 720,146
Int. Cl.² C07C *143/79;* **A61K** *31/18*
U.S. Cl. 260—556 AR **4 Claims**

1. A compound of the structure

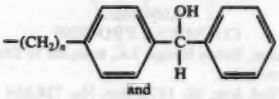


and its acid addition salts wherein:

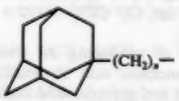
R_1 is selected from the group consisting of hydrogen, methyl and 2-hydroxyethyl;

R_2 is selected from the group consisting of hydrogen, lower alkyl having 1 to 6 carbon atoms and ω-hydroxyalkyl having 1 to 6 carbon atoms;

R_3 is selected from the group consisting of alkyl having from 12 to 24 carbons, a monovalent aliphatic non-cyclic hydrocarbon having from 12 to 24 carbon atoms and 1 to 2 double bonds therein,



and



wherein

n is an integer from one to six and

X is

and R_4 is selected from the group consisting of phenyl, naphthyl and phenyl-napthyl.

4,058,563
NOVEL SCHIFF BASES

Reinhard H. Richter, North Haven, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 724,585, Sept. 20, 1976, Pat. No. 4,020,104. This application Mar. 28, 1977, Ser. No. 782,242
Int. Cl.² C07C *119/00*
U.S. Cl. 260—566 F **3 Claims**

1. The bis-benzaldimine of cis,cis-di-(p-aminocyclohexyl)-methane

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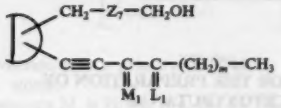
4,058,564
ALIPHATIC 2-DECARBOXY-2-HYDROXYMETHYL-13,14-DIDEHYDRO-PG COMPOUNDS

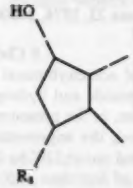
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

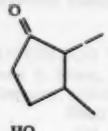
Filed July 26, 1976, Ser. No. 708,752
Int. Cl.² C07C *35/06, 43/27, 49/46, 49/58*
U.S. Cl. 260—586 R **154 Claims**

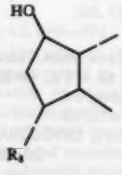
1. A prostaglandin analog of the formula:



wherein is







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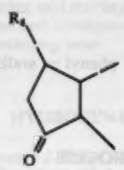
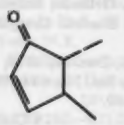
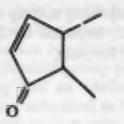




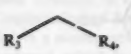
, or



wherein R_8 is hydrogen or hydroxy;
wherein M_1 is

or

wherein R_5 is hydrogen or methyl;
wherein L_1 is



or a mixture of

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein Z_7 is
(1) cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis-CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis-CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—, or
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
wherein g is one, 2, or 3; and
wherein m is one to 5, inclusive.

4,058,565

PROCESS FOR OXIDIZING HYDROCARBONS

Reinhard Thiel, and Heinz Jörg Rosenbaum, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 411,525, Oct. 31, 1973, abandoned. This application Apr. 13, 1976, Ser. No. 676,605
Claims priority, application Germany, Dec. 8, 1972, 2260114
Int. Cl.[2] C07C *27/12, 27/26, 29/00, 45/02*
U.S. Cl. 260—586 AB **7 Claims**

1. In a process for oxidizing hydrocarbons wherein
a. saturated C_4–C_{20} hydrocarbons are reacted with a gas comprising molecular oxygen in the presence of a boron compound forming esters with alcohols formed from said hydrocarbons;
b. the resulting reaction mixture containing at least one boric acid ester is hydrolyzed;
c. the hydrolyzate is separated into a substantially organic component, from which the oxidation product is recovered, and into a substantially aqueous component, containing boric acid and water-soluble organic secondary products;
and
d. boric acid from the aqueous component is recycled to (a);
the improvement which comprises
e. crystallizing boric acid from the aqueous phase to deposit therefrom the boric acid which is recycled to (a), thereby leaving a saturated aqueous mother liquor containing boric acid;
f. oxidizing at least part of the residual saturated boric acid-containing mother liquor from (e) in the liquid phase with a gas comprising molecular oxygen at a temperature of at least 200° C and under a pressure sufficient to keep at least some of the water in the liquid phase so that the organic impurities contained in said mother liquor are oxidized to an extent of from about 41 to 94%;
and
g. recycling the resulting aqueous solution containing boric acid from step (f) to the hydrolysis of step (b).

4,058,566

SEPARATION OF ISOMERS OF PHENOLS AND PHENOLIC ETHERS

Michael Martan, Skokie, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sept. 1, 1976, Ser. No. 719,648
Int. Cl.[2] C07C *45/24*
U.S. Cl. 260—600 R **7 Claims**

1. A process for the separation by selective reaction of a mixture of ortho-chloromethylanisole and para-chloromethylanisole or a mixture of o-chloromethylphenol and p-chloromethylphenol, which comprises treating the mixture with hexamethylenetetramine in the presence of a protonic solvent at a temperature of from about 0° to about 20° C., and recovering the separated p-anisic aldehyde or p-hydroxybenzenaldehyde.

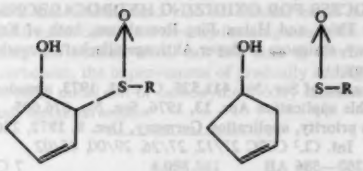
4,058,567

CYCLOPENTENE SULFOXIDES

David A. Evans, Pasadena, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 499,287, Aug. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 349,888, April 10, 1973, abandoned. This application May 17, 1976, Ser. No. 687,422
Int. Cl.[2] C07C *147/14, 69/74, 61/38*
U.S. Cl. 260—607 A **1 Claim**

1. A compound selected from the group consisting of



where R is phenyl or alkyl of from 1 to 12 carbon atoms.

4,058,568

HEXAHALO-1,4-DIHYDRO-1,4-METHANONAPHTHALENE-5,8-DIOL PHENYLSULFONES

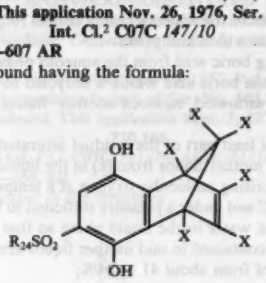
Julian R. Little, Wayne; Walter Nudenberg, West Caldwell, and Yong S. Rim, Paterson, all of N.J., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 486,482, July 8, 1974, Pat. No. 4,009,200, which is a division of Ser. No. 329,177, Feb. 2, 1973, Pat. No. 3,875,236, which is a division of Ser. No. 80,747, Oct. 14, 1970, abandoned. This application Nov. 26, 1976, Ser. No. 745,065

Int. Cl.² C07C *147/10*

U.S. Cl. 260—607 AR **2 Claims**

1. A compound having the formula:



wherein R_{24} is lower alkyl, phenyl, chlorophenyl, or a halogen substituted lower alkyl and X is halogen.

4,058,569

SYNTHESIS OF VITAMIN A, INTERMEDIATES AND CONVERSION THEREOF TO VITAMIN A

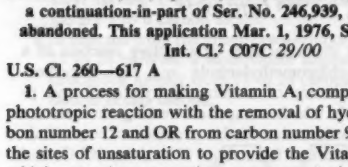
William Oroshnik, Plainfield, N.J., assignor to SCM Corporation, New York, N.Y.

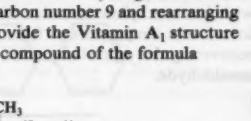
Division of Ser. No. 566,981, April 10, 1975, which is a division of Ser. No. 353,215, April 23, 1973, Pat. No. 3,949,006, which is a continuation-in-part of Ser. No. 246,939, April 24, 1972, abandoned. This application Mar. 1, 1976, Ser. No. 662,335

Int. Cl.² C07C *29/00*

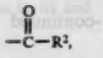
U.S. Cl. 260—617 A **1 Claim**

1. A process for making Vitamin A_1 comprising inducing a phototropic reaction with the removal of hydrogen from carbon number 12 and OR from carbon number 9 and rearranging the sites of unsaturation to provide the Vitamin A_1 structure which comprises contacting a compound of the formula





where R is a member of the group cconsisting of lower alkyl, lower alkenyl, phenyl or aralkyl and R^1 is a member of the group consisting of hydrogen or



R^2 being a lower alkyl, phenyl, substituted phenyl or aralkyl, with a strong basic medium.

4,058,570

BROMINATED BIPHENOL PROCESS

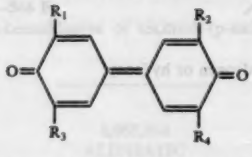
Philip L. Kinson, Rexford, and Charles M. Orlando, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 533,948, Dec. 18, 1974, abandoned. This application May 7, 1976, Ser. No. 684,175

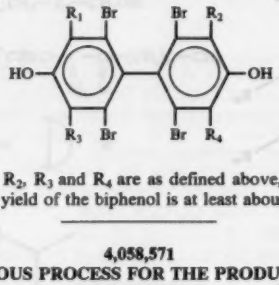
Int. Cl.² C07C *37/00, 41/00, 49/62*

U.S. Cl. 260—620 **9 Claims**

1. An improved bromination process comprising adding at a temperature at least below about +20° C, bromine to 3,3', 4,4'-tetrasubstituted diphenoquinone of the formula



wherein independently each R_1, R_2, R_3 and R_4 substituent is selected from the group consisting of primary C_{1-8} alkyl, primary C_{1-8} alkoxy, phenyl and 4-bromophenyl in the presence of a liquid diluent, evolving hydrogen bromide gas at a temperature of at least about +15° C, heating the resulting reaction mixture at elevated temperatures to complete the bromination reaction, and recovering a 2,2',6,6'-tetrabromo- 3,3',5,5'-tetrasubstituted-4,4' -biphenol, of the formula



wherein R_1, R_2, R_3 and R_4 are as defined above, and further wherein the yield of the biphenol is at least about 70%.

4,058,571

CONTINUOUS PROCESS FOR THE PRODUCTION OF D,L'MENTHOL

Wolfgang Biedermann, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 452,592, March 19, 1974, abandoned. This application Oct. 20, 1975, Ser. No. 624,144

Claims priority, application Germany, Mar. 24, 1973, 2314813

Int. Cl.² C07C *27/04, 35/12*

U.S. Cl. 260—631 H **14 Claims**

1. In a process for production of d,l-menthol by contacting a starting material which is a compound having the carbon skeleton of menthol and which is convertible to d,l-menthol by catalytic hydrogenation, and having at least one double bond and being substituted in the 4-position by oxygen, with hydrogen in the presence of a catalyst for hydrogenation of said starting material, in a contacting zone, at a temperature, pressure, and residence time sufficient for the hydrogenation to form said d,l-menthol, the improvement which comprises employing as said catalyst a cobalt-manganese catalyst containing 20 to 25% by weight of manganese, based on the total quantity of cobalt and manganese, and activated with up to 1%

by weight of copper based on the total weight of the catalyst, and operating the process continuously by continuously introducing said starting material and hydrogen into the contacting zone and continuously withdrawing the d,l-menthol from the contacting zone.

4,058,572

HYDROGENATION OF CYCLIC UNSATURATED COMPOUNDS

Bernard J. Kane, Atlantic Beach; Karen E. Irving, Orange Park; James O. Bledsoe, Jr., Jacksonville, and Levy A. Canova, Orange Park, all of Fla., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 488,487, July 15, 1974, abandoned. This application May 6, 1975, Ser. No. 574,911

Int. Cl.[2] C07C *29/00, 35/08*

U.S. Cl. 260—631.5 **13 Claims**

1. In a process for hydrogenation, with elemental hydrogen gas in the presence of a hydrogenation catalyst, under hydrogenation conditions, of a cyclic unsaturated compound having a hydroxyl group projecting from an asymmetric center of the ring and an olefinic carbon-to-carbon double bond which when saturated in the hydrogenation process creates in additional asymmetric center in the ring, the improvement for obtaining increased stereoselectivity by increasing the addition of said hydrogen to that side of the olefinic bond on the same side of the compound molecule as said hydroxyl group, wherein said hydrogenation is conducted with a nickel hydrogenation catalyst that has an effective fraction of its reactive surfaces inactivated by treating said catalyst with an effective amount of a modifier selected from the group consisting of: an inorganic salt of a metal from Groups I through VIII, Periods 4 through 7 of the Periodic Table, of the Rare Earths of the Periodic Table, and of aluminum; organic halides; hydrogen halides; and halo compounds or arsenic and boron.

4,058,573

PROCESS FOR THE ADDITION OF GASEOUS NON-HALOGENATED OLEFINS AND ACETYLENES TO PERFLUOROALKYL IODIDES

Martin Knell, Ossining, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 159,515, July 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 4,179, Jan. 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 693,148, Dec. 26, 1967, abandoned. This application Apr. 4, 1974, Ser. No. 457,879

Int. Cl.[2] C07C *21/20*

U.S. Cl. 260—653.1 T **14 Claims**

1. A process for the addition of perfluoroalkyl iodides of the formula $ZC_nF_{2n}I$, where Z represents F or I, n is an integer of 4 – 18, said iodides are liquid at reaction temperature, to non-halogenated olefins or non-halogenated acetylenes which are gaseous at the employed reaction temperature, which comprises bubbling said olefin or acetylene into said liquid iodide, in the presence of a free-radical generating catalyst, at atmospheric or less than atmospheric pressure, at a reaction temperature of about 40° C to about 220° C, and recovering the reaction addition product which is essentiaily free of telomers.

4,058,574

PROCESS FOR THE OXYCHLORINATION OF HYDROCARBONS WITH AMMONIUM CHLORIDE

Jean-Claude Daumas, Orsay, France, assignor to Rhone-Progil, Paris, France

Continuation of Ser. No. 378,071, July 11, 1973, abandoned. This application Aug. 22, 1975, Ser. No. 606,885

Claims priority, application France, July 11, 1972, 72.25070

Int. Cl.[2] C07C *17/15*

U.S. Cl. 260—659 A **12 Claims**

1. A process for the catalytic oxychlorination of hydrocarbons with chlorine derived at least in part from ammonium chloride comprising contacting a gaseous mixture containing a hydrocarbon, ammonium chloride and an oxygen-containing gas with a catalyst of copper chloride and an alkali metal chloride on a support consisting essentially of silica and magnesia at a temperature within the range of 200° to 380° C.

4,058,575

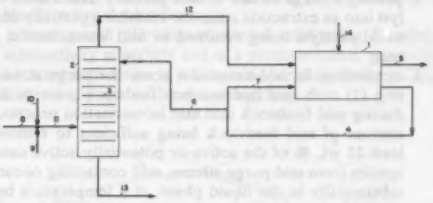
CATALYST PRETREATMENT WITH HYDROCARBON FEEDSTOCK

Robert P. Cahn, Millburn, and John P. Longwell, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed June 12, 1975, Ser. No. 586,177

Int. Cl.[2] C07C *13/00, 3/56, 5/28;* B01J *27/38*

U.S. Cl. 260—666 P **13 Claims**



1. In a hydrocarbon conversion process which comprises contacting a hydrocarbon feedstock with a liquid phase catalyst comprising tantalum pentafluoride, niobium pentafluoride or mixtures thereof in combination with at least an equimolar amount of hydrogen fluoride, thereby forming a partially deactivated catalyst which contains active or potentially active catalyst species and deactivated catalyst species, the improvement which comprises maintaining hydrocarbon conversion activity of the catalyst in said process by the steps comprising

1. passing a purge stream of said partially deactivated catalyst into an extraction zone, the remaining partially deactivated catalyst being returned to said hydrocarbon conversion process;
2. contacting, in said extraction zone, the purge stream of step (1) with said hydrocarbon feedstock prior to introducing said feedstock into said hydrocarbon conversion process, the amount of said feedstock being sufficient to remove at least 25 wt. % of the active or potentially active catalyst species from said purge stream, said contacting occurring substantially in the liquid phase and at a temperature below the critical temperature of the hydrogen fluoride, the volume ratio of said purge stream to said hydrocarbon feedstock ranging from about 1:20 to about 1:100,000;
3. forming an extract phase containing substantially all of the hydrocarbon feedstock employed in step (2) and substantially all of the active or potentially active catalyst species removed in step (2) and a raffinate phase containing at least 50 wt. % of the deactivated catalyst species present in the purge stream of step (1);
4. passing at least a portion of said extract phase from said extraction zone to said hydrocarbon conversion process;
5. withdrawing a raffinate phase containing said deactivated catalyst species from said extraction zone; and
6. adding active catalyst to said hydrocarbon conversion process in an amount sufficient to replace the active or potentially active catalyst species not returned to the hydrocarbon conversion process in step (4) and the deactivated catalyst species withdrawn in step (5).

2. The process of claim 1 wherein hydrogen is present in the extraction zone in an amount sufficient to maintain a hydrogen partial pressure of at least 0.1 atmospheres.

3. The process of claim 1, wherein the hydrocarbon feedstock comprises (1) a component selected from the group consisting of an aliphatic hydrocarbon having at least one

carbon atom, a cycloaliphatic hydrocarbon having at least 5 carbon atoms, an aromatic and alkyl aromatic hydrocarbon having at least 6 carbon atoms and mixtures thereof and (2) olefins containing from 2 to 12 carbon atoms per molecule.

12. In an isomerization process which comprises contacting a hydrocarbon feedstock comprising a saturated acyclic hydrocarbon having at least four carbon atoms, a saturated alicyclic hydrocarbon having at least six carbon atoms or mixtures thereof, with a liquid phase catalyst comprising tantalum pentafluoride, niobium pentafluoride or mixtures thereof in combination with at least an equimolar amount of hydrogen fluoride, thereby forming a partially deactivated catalyst which contains active or potentially active catalyst species and deactivated catalyst species, the improvement which comprises maintaining hydrocarbon conversion activity of the catalyst in said process by the steps comprising

1. passing a purge stream of said partially deactivated catalyst into an extraction zone, the remaining partially deactivated catalyst being returned to said isomerization process;
2. contacting, in said extraction zone, the purge stream of step (1) with said hydrocarbon feedstock prior to introducing said feedstock into said isomerization process, the amount of said feedstock being sufficient to remove at least 25 wt. % of the active or potentially active catalyst species from said purge stream, said contacting occurring substantially in the liquid phase, at a temperature below the critical temperature of the hydrogen fluoride and at a hydrogen partial pressure of at least 0.1 atmospheres, the volume ratio of said purge stream to said hydrocarbon feedstock ranging from about 1:20 to about 1:100,000;
3. forming an extract phase containing substantially all of the hydrocarbon feedstock employed in step (2) and substantially all of the active or potentially active catalyst species removed in step (2) and a raffinate phase containing at least 50 wt. % of the deactivated catalyst species present in the purge stream of step (1);
4. passing at least a portion of said extract phase from said extraction zone to said isomerization process;
5. withdrawing a raffinate phase containing said deactivated catalyst species from said extraction zone; and
6. adding active catalyst to said isomerization process in an amount sufficient to replace the active or potentially active catalyst species not returned to the isomerization process in step (4) and the deactivated catalyst species withdrawn in step (5).

4,058,576

CONVERSION OF METHANOL TO GASOLINE COMPONENTS

Clarence D. Chang, Princeton, and Shamsher S. Grover, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 496,434, Aug. 9, 1974, abandoned. This application Sept. 7, 1976, Ser. No. 720,870

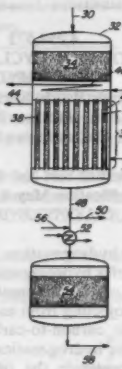
Int. Cl.[2] C10G *37/06*; B01J *29/28*

U.S. Cl. 260—673 **8 Claims**

1. In the process of converting at least one lower aliphatic alcohol having from 1–3 carbon atoms into hydrocarbon products comprising olefins, wherein said alcohol is contacted with a condensation catalyst at elevated temperatures in a first reaction zone in order to obtain a product comprising a mixture of water and at least one ether, and said product from said first reaction zone is therefore contacted with a crystalline aluminosilicate zeolite in a second reaction zone, said zeolite having a pore size greater than about 5 Angstrom Units, a silica to alumina ratio of at least about 12, and a constraint index of about 1 to 12 at elevated temperatures in order to obtain said hydrocarbon product comprising olefins, the improvement which comprises:

a. adjusting the temperature of the first reaction zone product to a temperature within the range of 600° F to about 800° F;

b. introducing said product from step (a) into said second reaction zone, wherein said crystalline aluminosilicate zeolite is confined within a plurality of adjacent elongated confined reaction zones surrounded by a heat exchange fluid; and



c. controlling exothermic reaction conditions within said elongated confined reaction zone in order to obtain said hydrocarbon product comprising olefins.

4,058,577

MODIFIED ZINC FERRITE OXIDATIVE DEHYDROGENATION CATALYSTS

James R. Baker, Fort Worth, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Division of Ser. No. 502,775, Sept. 3, 1974, Pat. No. 3,951,869. This application Oct. 16, 1975, Ser. No. 622,826

Int. Cl.[2] C07C *11/12*

U.S. Cl. 260—680 D **7 Claims**

1. In the process of oxidative dehydrogenation of organic compounds having from about 2 to 20 carbon atoms and at least one

group in the presence of a catalyst composition at a temperature of from about 500° F to about 1,200° F and in the presence of from about 0.2 to about 2.0 mols of oxygen per mole organic compound to thereby produce a dehydrogenated compound having the same number of carbon atoms, wherein the improvement comprises said catalyst consisting of (1) a zinc ferrite composition having the empirical formula

$$Zn_xFe_yO_z$$

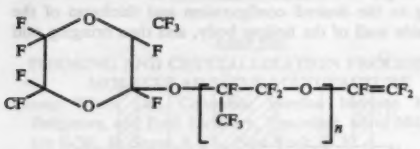
wherein x is from about 0.1 to about 2, y is from 0.3 to about 12, and z is from about 3 to 18 and (2) additionally containing free manganese oxide as a promoter in an amount from about 0.1 to about 10 weight percent based on the weight of the zinc ferrite composition.

4,058,578
PROCESS FOR THE MANUFACTURE OF PASTE-EXTRUDABLE POLYMERS OF TETRAFLUOROETHYLENE

Jürgen Kuhls, Burghausen, Salzach; Thomas Martini, Neuenhain, Taunus, and Alfred Steininger, Burgkirchen Alz, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Sept. 29, 1976, Ser. No. 727,643
Claims priority, application Germany, Oct. 2, 1975, 2544040
Int. Cl.[2] C08F *214/26;* C08L *27/18*
U.S. Cl. 260—884 13 Claims

1. In a process for the manufacture of modified tetrafluoroethylene disperion polymers by polymerizing tetrafluoroethylene, subsequently coagulating and drying of the polymer obtained, the improvement comprises carryng out the polymerization of tetrafluoroethylene in the presence of a modifying agent comprising from 0.0005 to 1.5% by weight, calculated on the tetrafluoroethylene used, of a perfluorinated vinyl ether of the formula



(I)

in which *n* stands for zero to 4, or of a mixture of any two or more of said perfluorinated vinyl ethers.

4,058,579
PROCESS FOR PRODUCING AN IMPROVED BORON NITRIDE CRUCIBLE

Robert William Lashway, Middleburg Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 553,814, Feb. 27, 1975, Pat. No. 3,986,822.
This application Feb. 5, 1976, Ser. No. 655,489
Int. Cl.[2] C23C *11/08*
U.S. Cl. 264—81 14 Claims

1. A process for producing a boron nitride crucible having a multi-walled structure comprising an outer wall and a thinner inner wall weakly bonded to the thicker outer wall, said process comprising: (1) reacting ammonia and a boron halide in vapor phase at a temperature of from about 1850° C. to about 2100° C. under a pressure no greater than about 1 mm. of mercury absolute to produce boron nitride, and depositing a first layer of said boron nitride upon a mandrel having the shape of the desired crucible; (2) interrupting the reaction between the ammonia and boron halide and the further deposition of boron nitride upon the mandrel; (3) lowering the temperature of the boron nitride layer to below 1750° C.; and (4) reacting additional ammonia and boron halide in vapor phase at a temperature of from about 1850° C. to about 2100° C. under a pressure no greater than about 1 mm. of mercury absolute to produce additional boron nitride and depositing a second layer of said boron nitride upon the first boron nitride layer, said second layer of boron nitride having a thickness greater than that of the inner first layer.

4,058,580
PROCESS FOR MAKING A REINFORCED BOARD FROM LIGNOCELLULOSIC PARTICLES

Robert D. Flanders, Rte. 2, Box 666 No. 42, Wilsonville, Oreg. 97070

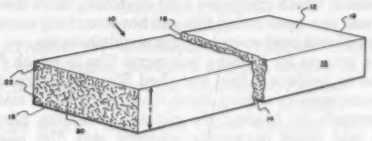
Filed Dec. 2, 1974, Ser. No. 528,705
Int. Cl.[2] B29J *5/00*
U.S. Cl. 264—113 5 Claims

1. A process for making a reinforced particle board comprising:

a. placing on a generally horizontal supporting surface a uniform mixture of lignocellulosic particles and a settable adhesive binder as a first incremental layer, together with a plurality of discontinuous first reinforcing filaments distributed uniformly throughout said mixture, said first reinforcing filaments having discontinuous lengths in the range of about ¼ to 1½ inch and having a tensile strength which exceeds the tensile strength of the mixture of said lignocellulosic particles and binder when the binder is set, the total weight of said lignocellulosic particles in said mixture being greater than the weight of said first reinforcing filaments in said mixture and said first filaments being distributed throughout said mixture in a random orientation so as to extend generally in all directions;

b. depositing atop said first incremental layer a plurality of second reinforcing filaments, each having a continuous length greater than any of said first reinforcing filaments and having a tensile strength which exceeds the tensile strength of the mixture of said lignocellulosic particles and binder when the binder is set;

c. orienting said plurality of second reinforcing filaments substantially straightly and in a predetermined, generally horizontal direction in side-by-side parallel relation to and transversely spaced from one another;



d. depositing atop said plurality of second reinforcing filaments a second incremental layer of said mixture and randomly oriented first reinforcing filaments having the same composition as said first incremental layer;

e. depositing atop said second incremental layer a further plurality of said second reinforcing filaments;

f. orienting said further plurality of second reinforcing filaments substantially straightly and in a predetermined, generally horizontal direction in side-by-side parallel relation to and transversely spaced from one another;

g. depositing atop said further plurality of said second reinforcing filaments a third incremental layer of said mixture and randomly oriented first reinforcing filaments having the same composition as said first incremental layer;

h. compressing said layers to a predetermined thickness by applying pressure thereto in a generally vertical direction; and

i. while said layers are so compressed, setting the binder therein to bond said lignocellulosic particles to one another and to said randomly oriented first filaments and to said second reinforcing filaments substantially throughout the continuous length of said second filaments so as to form said reinforced board.

4,058,581
METHOD OF MAKING THERMOPLASTIC RESIN COMPOSITE

Im K. Park, Summit, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 274,497, July 24, 1972, abandoned.
This application Oct. 28, 1976, Ser. No. 736,331
Int. Cl.[2] B29D *3/02*
U.S. Cl. 264—136 8 Claims

1. A method for producing a fiber reinforced thermoplastic resin stock having about 10 to 50% by volume of fiber therein comprising continuously passing graphite fiber material as a multiplicity of individual strands through a solution of thermoplastic resin to coat the fiber with resin solution, said resin being an acrylic acid grafted polyolefin and said solution having a viscosity in the range of about 2 to 4000 centipoise while being maintained at a temperature in the range of about 80° C to 145° C; treating the solution coated fibers to remove the

solvent; consolidating said coated fibers into a predetermined cross-sectional shape and size while heating the coated fibers to a temperature sufficient to melt the resin; and, thereafter cooling the shaped resin coated fibers under confining pressures to a temperature below the melting point of the resin whereby a continuous fiber reinforced thermoplastic stock material is obtained having low fiber loadings between about 10 to 50% by volume.

4,058,582

SIMULTANEOUS STRETCHING OF MULTIPLE PLIES OF POLYMERIC FILM

Harvey S. Bierenbaum, Berkley Heights; John A. Penoyer, North Plainfield, and Daniel Zimmerman, East Brunswick, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed May 30, 1973, Ser. No. 365,366
Int. Cl.[2] B29D 7/24, 27/00
U.S. Cl. 264—154 2 Claims

1. In a process for forming microporous film in which an elastic, non-open celled film is cold-stretched in the longitudinal direction, said cold-stretched film thereafter hot-stretched in the longitudinal direction to form said microporous film, the improvement which comprises cold-stretching more than two plies of said non-open celled film and hot-stretching more than two plies of said cold-stretched film simultaneously.

2. In a process for forming polymeric film in which film is stretched to produce a final stretched film, the improvement which comprises stretching more than two plies of said film simultaneously by holding the edges of said film plies and moving said edges outwardly whereby said film plies are stretched simultaneously in the transverse direction.

4,058,583

GRAFTING OF SILANE ON THERMOPLASTICS OR ELASTOMERS FOR PURPOSES OF CROSS-LINKING

Fritz Glander, Isernhagen, and Hermann Uwe Voigt, Langenhagen, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte AG., Vahrenwalder, Germany

Division of Ser. No. 557,108, March 10, 1975. This application Aug. 18, 1975, Ser. No. 605,747
Int. Cl.[2] C08F 255/02, 291/02; C08G 77/42
U.S. Cl. 264—176 R 12 Claims

1. In a method for providing a sheathing of cross-linking thermoplastic or elastomeric material, wherein the powdery or granular material is mixed with silane to be diffused into the material under conditions of obtaining a homogenic mixture and wherein the silane is grafted upon the molecules of the material, the improvement of adding water-containing additives to the mixture, and extruding a sheath, the water being released at an elevated temperature pursuant to the extrusion to cause cross-linking of the silane grafted material in the presence of moisture.

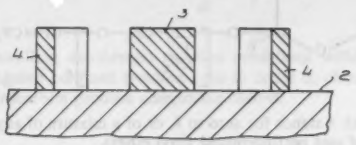
4,058,584

METHOD FOR MANUFACTURING LUMINOUS HOLLOW BODIES FOR SIGNS OR THE LIKE

Enrique Ubach Aloy, Avenida Madrid, 12; Pedro Ubach Aloy, Calle La Gleva, 42, both of Barcelona, and José Maria Genovart Aguiló, Calle Victoria, 211, San Baudilio De Llobregat, all of Spain

Filed Apr. 1, 1975, Ser. No. 563,959
Claims priority, application Spain, Apr. 5, 1974, 425384
Int. Cl.[2] B29H 9/00
U.S. Cl. 264—250 3 Claims

1. In a method for manufacturing hollow bodies adapted to be used for luminous signs, comprising the steps of first molding an endless wall of predetermined configuration, so that said endless wall will form an open-ended endless side wall of the final hollow body, and then molding at only one end of the space confined within said endless wall an end wall of the hollow body joined to said endless wall along an end region thereof, so that the thus-molded end wall together with the thus-molded endless side wall will define a space adapted to receive light which can travel through said end and side walls of the hollow body to form at least part of a luminous sign, said molding of said endless side wall of the hollow body comprising the steps of situating around an inner mold member on an upper substantially flat surface of a support a plurality of layers of thermosetting synthetic resin which rest at bottom side edges thereof on said upper surface of said support during an interval when said layers of thermosetting synthetic resin are still hardening but have not fully set and are self-sustaining while still being soft enough to be molded to a desired configuration with each of the layers having at least one desired characteristic of strength, light-transmission, and the like which are to be included in the final hollow body, and each layer having a width corresponding to the desired depth of the luminous hollow body which is to be manufactured, and placing on said upper surface of said support around said layers a plurality of sections of an outer mold member which when joined together will surround the inner mold member while defining therewith a cavity of predetermined configuration and thickness corresponding to the desired configuration and thickness of the endless side wall of the hollow body, and then bringing said



sections of said outer mold member together on said upper surface of said support for pressing the innermost of said layers against the exterior surface of said inner mold member fand the outermost of said layers against the inner surface of the outer mold member formed by bringing the sections thereof together, while said layers will engage each other and fuse together during continued setting of said layers, and maintaining said outer mold member with its sections joined to each other in engagement with said outermost layer while said innermost layer remains in engagement with said inner mold member until a sufficient time has elapsed for said layers to have hardened and set sufficiently to remain in the configuration desired for the final hollow body at the side wall thereof, and thereafter removing the outer and inner mold members from the layers so that the side wall of the hollow body produced thereby will have a precisely determined thickness as well as a precisely determined configuration at its inner surface as well as its outer surface and a texture at its inner and outer surfaces determined by the characteristics of the outer surface of the inner mold member and the inner surface of the outer mold member, respectively.

4,058,585

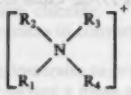
SOLVENT EXTRACTION OF METALS FROM ACIDIC SOLUTIONS WITH QUATERNARY AMMONIUM SALTS OF HYDROGEN ION EXCHANGE AGENTS

Kenneth D. MacKay, Circle Pines, and Edgar R. Rogier, Minnetonka, both of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Nov. 10, 1975, Ser. No. 630,600
Int. Cl.[2] C01G 3/00, 9/00, 51/00, 53/00
U.S. Cl. 423—24 14 Claims

1. The process of extracting divalent metal values from an aqueous acidic solution thereof comprising contacting said solution with a solution of a quaternary ammonium salt of a hydrogen ion exchange agent in an essentially water-immiscible organic solvent to extract at least a portion of the said divalent metal values into the organic phase, separating the loaded organic phase from the aqueous phase and stripping the divalent metal values from the loaded organic phase by contacting same with an aqueous acidic stripping medium, said

divalent metal values being capable of being extracted from an aqueous acidic solution thereof, said quaternary ammonium salt of the hydrogen ion exchange agent having the formula QL where Q is a quaternary ammonium cation and L is the deprotonated moiety or anion of the hydrogen ion exchange agent and said quaternary ammonium cation having the formula



where R_1 is a hydrocarbon radical of 6 to 24 carbon atoms and R_2, R_3 and R_4 are hydrocarbon radicals of 1 to 24 carbon atoms.

13. The process of claim 1 wherein the divalent metal values are selected from copper, nickel, cobalt and zinc.

4,058,586

FORMING AND CRYSTALLIZATION PROCESS FOR MOLECULAR SIEVE MANUFACTURE

Chang Whan Chi, Columbia; Gordon Herman Hoffman, Baltimore, and Emil Eichhorn, Timonium, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 25, 1976, Ser. No. 661,457
Int. Cl.² C01B 33/28
U.S. Cl. 423—118 8 Claims

1. In a process for preparing formed zeolite particles wherein a powdered zeolite is mixed with amounts of metakaolin, sodium hydroxide and water required to produce additional zeolite, and the resulting mixture is formed to obtain reactive zeolite containing particles which are subsequently reacted at elevated temperatures to convert the metakaolin to zeolite, the improvement which comprises:

a. heating the formed particles which contain about 30 to 45 percent by weight moisture at a temperature of about 200° to 700° F. for a period of 15 to 60 minutes to reduce the moisture content thereof to about 10 to 20 percent by weight and to simultaneously convert said metakaolin to zeolite; and

b. calcining said particles to a temperature of 400° to 1100° F. for 15 to 60 minutes.

4,058,587

PROCESS FOR REMOVING IMPURITIES FROM ACIDIC FLUID SOLUTIONS

Ernest William Nelson, 372 N. Algoma St., Postal Station (P), Thunder Bay, Ontario, Canada

Continuation-in-part of Ser. No. 363,611, May 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 66,878, Aug. 25, 1970, abandoned. This application Dec. 18, 1975, Ser. No. 641,877
Int. Cl.² B01D 53/34
U.S. Cl. 423—220 17 Claims

1. A process for removing impurities from an acidic fluid solution, the acidic solution containing as impurities at least one acidic component selected from a group consisting of carbon dioxide and sulfur dioxide, which comprises

forming an admixture of a serpentine material having the formula $Mg_6(Si_4O_{10})(OH)_8$ and water, the serpentine material being a heterogeneous mixture comprising primarily a magnesium hydroxide and silica, and

mixing the acidic fluid solution with the admixture to produce a solid consisting predominately of at least one salt selected from a group consisting of magnesium sulfite and magnesium carbonate and silica and substantially pure water.

4,058,588

PROCESS FOR RECOVERING BORIC ACID

Clifford Gordon Brown, Fetcham, and Brian Robert Sanderson, New Malden, both of England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Oct. 23, 1975, Ser. No. 625,145
Claims priority, application United Kingdom, Oct. 23, 1974, 45832/74
Int. Cl.² C01B 35/10
U.S. Cl. 423—283 6 Claims

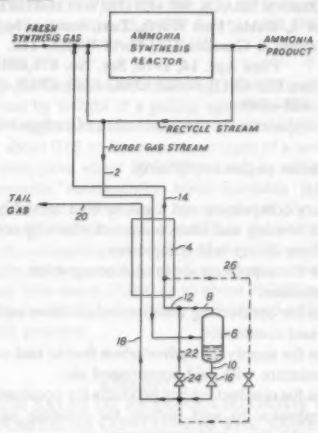
1. The process for recovering boric acid from an acidic sodium borate-mineral acid reaction product mixture which comprises extracting said product mixture with a monohydric alcohol-diluent solution at a temperature of about 50° to 80° C., stripping the alcohol-diluent solution with recycled hot dilute boric acid solution, cooling to crystallize said boric acid, and recovering said boric acid from said cooled solution, in which said monohydric alcohol is an aliphatic alcohol containing 6 to about 12 carbon atoms and said diluent is selected from C_{12-17} hydrocarbons, C_{9-11} alcohols and water-immiscible glycol ethers of the formula $XO(CH_2)_nOY$ wherein n is 2 or 3 and X and Y are each selected from hydrogen, lower alkyl and monocyclic aryl.

4,058,589

TREATMENT OF AMMONIA SYNTHESIS PURGE GAS

Alan Alfred Haslam, Stockport, England, assignor to Petrocarbon Developments Limited, Manchester, England

Filed Jan. 30, 1976, Ser. No. 653,830
Claims priority, application United Kingdom, Feb. 6, 1975, 5111/75
Int. Cl.² C01C 1/04
U.S. Cl. 423—359 3 Claims



1. A method of synthesizing ammonia, comprising the steps of:

i. reacting a synthesis gas comprising nitrogen and hydrogen, and also including methane, argon and helium as contaminants, at superatmospheric pressure in an ammonia synthesis reaction zone and recycling unreacted gas to the reaction zone;

ii. withdrawing a purge gas stream at superatmospheric pressure from the gas being recycled;

iii. removing methane and argon from the purge gas stream by cooling the purge gas stream to a sub-ambient temperature to partially condense it and form a condensate phase containing methane and argon and a hydrogen-enriched gaseous phase containing helium and separating the phases into a gaseous hydrogen-enriched stream containing helium and at least one condensate stream containing methane and argon, and recycling said gaseous hydrogen-enriched stream to said reaction zone;

iv. providing refrigeration for said cooling and partial condensation of the purge gas stream by expanding at least a

part of said at least one condensate stream and evaporating the expanded condensate in indirect heat exchange with the purge gas stream, and then withdrawing the evaporated expanded condensate as tail gas;

v. withdrawing a single bleed stream from the recycling hydrogen enriched stream;

vi. maintaining the concentration of methane, argon and helium in the ammonia synthesis reaction zone substantially constant by withdrawing helium, argon and methane in said bleed stream and said at least one condensate stream at substantially the same rate as they are introduced into the ammonia synthesis reaction zone with fresh synthesis gas; and

vii. recovering the tail gas at a pressure above 18 psig by withdrawing said bleed stream from said hydrogen enriched stream at a temperature not exceeding 30° C above said subambient temperature, expanding at least a part of said bleed stream and injecting said expanded part into said expanded condensate prior to evaporating the latter.

4,058,590

CARBON BLACK REACTOR WITH TURBOFAN

Theodore A. Ruble, Fort Worth, Tex., assignor to Sid Richardson Carbon & Gasoline Co., Forth Worth, Tex.

Filed Apr. 14, 1976, Ser. No. 676,688
Int. Cl.[2] C01B *31/02;* C09C *1/48;* C01B *49/00*
U.S. Cl. 423—449 **9 Claims**

1. An apparatus for the production of carbon black comprising:

a turbofan engine comprising,

a body,

a rotary compressor and a gas turbine rotatably mounted in said housing and interconnected whereby rotation of said turbine drives said compressor.

means for supplying air to said compressor,

a combustor,

means for conducting compressed air from said compressor to said combustor,

means for supplying hydrocarbon fuel to said combustor for admixture with said compressed air,

means for conducting hot products for combustion from said combustor to said turbine for rotating said turbine to thereby drive said compressor;

an afterburner located downstream of said turbofan engine, axially aligned therewith, contiguous thereto and in open communication therewith for receiving the gases exhausted from said turbine,

said afterburner including means for supplying liquid fuel thereto for additional combustion with the gases exhausted from said turbine to thereby increase the temperature and reduce the free-oxygen content of said exhausted gases; and

a furnace-type carbon black reactor located downstream of said afterburner, axially aligned therewith, contiguous thereto and in open communication therewith for receiving the hot products of combustion from said afterburner,

said reactor including a reaction tunnel,

means for introducing hydrocarbon feedstock radially into said reactor tunnel,

means for quenching the reaction in said reaction tunnel; and

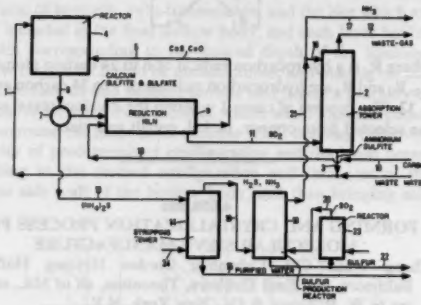
means for collecting the carbon black product.

4,058,591

PROCESS FOR PURIFYING WASTE WATER CONTAINING AMMONIUM SULFATE

Christian Busson, Rueil-Malmaison; Jacques Alagy, Lyon, and Maurice Cessou, Communay, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 26, 1975, Ser. No. 607,802
Claims priority, application France, Sept. 5, 1974, 74.30412
Int. Cl.[2] C01B *17/02;* C02B *1/34;* C02C *5/06*
U.S. Cl. 423—574 R **8 Claims**



1. A process for treating waste water containing ammonium sulfate to recover elemental sulfur, which comprises the steps of:

a. reacting said waste water with a mixture of calcium oxide and calcium sulfide and with recycled ammonium sulfite from step (f), the molar ratio CaS/CaO being at least 0.5:1 and the amounts of the reactants being sufficient to form simultaneously insoluble calcium sulfate, insoluble calcium sulfite, and ammonium sulfide dissolved in the aqueous phase and then separating the resulting mixture of insoluble calcium sulfate and calcium sulfite from the aqueous phase,

b. heating the mixture of calcium sulfite and calcium sulfate with carbon to the temperature of reduction of calcium sulfate to obtain a gas containing sulfur dioxide and a mixture of calcium oxide and calcium sulfide, and recycling said mixture to step (a),

c. stripping the aqueous phase obtained in step (a) to separate therefrom a gas containing hydrogen sulfide and ammonia, and discharging resultant residual aqueous phase,

d. reacting the gas separated in step (c) with sulfur dioxide, thereby producing sulfur and ammonia containing gas, and separating said sulfur,

e. dissolving at least a fraction of the ammonia containing gas recovered from step (d) with water together with the gas containing sulfur dioxide recovered from step (b), thereby forming ammonium sulfite,

f. recycling to step (a) at least a fraction of the ammonium sulfite recovered from step (e).

4,058,592

PREPARATION OF SUB-MICRON METAL OXIDE POWDERS FROM CHLORIDE-CONTAINING COMPOUNDS

Jean Marie Louis Joseph Quets, White Plains, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 30, 1976, Ser. No. 701,167
Int. Cl.[2] C01G *49/00, 23/00*
U.S. Cl. 423—594 **5 Claims**

1. A process for the preparation of sub-micron metal oxide powders which process comprises the steps of:

a. contacting a carbohydrate material with compounds of at least two metals selected from the group consisting of barium, titanium, iron and strontium, at least one of which

compounds contains a chloride ion to form a mixture thereof,

b. charring said mixture,

c. igniting said mixture to produce fragile agglomerates of sub-micron particle size,

d. contacting the agglomerates with an aqueous solution of a soluble ammonium compound to form ammonium chloride,

e. recovering the agglomerates from solution and washing to remove any ammonium chloride,

f. calcining the agglomerates to convert said mixture to the metal oxide, and

g. comminuting the agglomerates to produce finely divided metal oxide powder having a mean particle size below 1 micron.

4,058,593

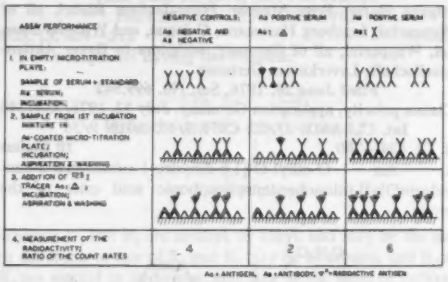
TECHNETIUM-LABELED BONE SCANNING AGENTS

James C. Nora, Forest Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 417,612, Jan. 28, 1976, abandoned. This application Jan. 28, 1976, Ser. No. 653,077

Int. Cl.[2] G01N *23/00*; G21H *5/02*

U.S. Cl. 424—1 **4 Claims**


ASSAY PERFORMANCE
NEGATIVE CONTROLS: Ag- NEGATIVE AND Ag NEGATIVE
Ag+ POSITIVE SERUM Ag+ △
Ag+ POSITIVE SERUM Ag+ X
1. IN EMPTY MICROTITRATION PLATE:
SAMPLE OF SERUM + STANDARD Ag+ SERUM;
INCUBATION;
4
2
6
Ag+ = ANTIGEN, Ag+ = ANTIBODY, T* = RADIOACTIVE ANTIGEN

1. A composition for use as a bone-specific radiodiagnostic agent which comprises: (1) SnF_2, (2) $MSnF_3$ or (3) MSn_2F_5, where M is either Na or K, containing from about .01 to 500 mCi of Tc-99m for each milligram of metal salt, characterized by a stable binding of the Tc-99m to the salt and distinguishable from its precursors by the following Rf values determined by thin layer chromatography on a 100 micron-thick, unactivated, neutral pH silica gel chromatogram sheet, wherein the silica gel of said chromatogram sheet is bound together with polyvinyl alcohol:

Rf=0, when said chromatogram is developed with anhydrous acetone;

Rf=0.6–0.8, when developed with anhydrous acetone containing concentrated HCl in a volume to volume ratio of 100:0.5.

4,058,594

IMMUNO-SUPPRESSIVE AGENTS

John Williams, 30 Hornby Drive, Nantwich, Cheshire, CW5 6JP, England

Division of Ser. No. 535,143, Dec. 20, 1974, Pat. No. 3,993,775. This application Aug. 10, 1976, Ser. No. 713,242

Claims priority, application United Kingdom, Apr. 25, 1974, 18226/74

Int. Cl.[2] A61K *9/40, 35/78, 31/23, 31/20*

U.S. Cl. 424—37 **8 Claims**

1. A method of providing an immuno-suppressive effect in a patient suffering from multiple sclerosis which comprises administering to said patient a daily dosage of from 25mg to 3g of at least one compound selected from the group consisting of γ-linolenic acid, dihomo-γ-linolenic acid, C_1–C_4 alkyl esters of γ-linolenic and dihomo-γ-linolenic acids and glyceride esters of γ-linolenic and dihomo-γ-linolenic acids.

4. A method as claimed in claim 3 wherein the oil is microencapsulated within the capsules.

4,058,595

STABILIZED TOOTHPASTES CONTAINING AN ENZYME

Daniel Colodney, Green Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 188,993, Oct. 13, 1971, abandoned. This application Mar. 21, 1974, Ser. No. 453,360

Int. Cl.[2] A61K *7/38*

U.S. Cl. 424—50 **9 Claims**

1. A toothpaste formulation consisting of essentially of about 0.2 to 10 percent by weight of a gelling agent and about 20 to 75 percent by weight of a liquid vehicle proportioned to form a creamy mass, about 0.5 to 5 percent by weight of a water-soluble organic detergent, about 20 to 75 percent by weight of a dentally acceptable polishing agent, at least about 0.05 percent by weight of the neutral protease of Bacillus subtilis, and a stabilizer for retention of protease activity consisting essentially of about 0.1 to 0.5 percent by weight of a protein having an average molecular weight ranging from about 10,000 up to about 300,000 selected from the group consisting of partially hydrolized edible proteins and edible proteins and about 0.1 to 1.0 percent by weight of a group IIA metal ion salt.

4,058,596

STABILIZED TOOTHPASTES CONTAINING AN ENZYME

Julius Harvey Nachtigal, Elizabeth, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 188,769, Oct. 13, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,599

Int. Cl.[2] A61K *7/28*

U.S. Cl. 424—50 **7 Claims**

1. A toothpaste formulation consisting essentially of about 0.2 to 10 percent by weight of a gelling agent and about 20 to 75 percent by weight of liquid vehicle proportioned to form a creamy mass, about 0.05 to 5 percent by weight of a water-soluble organic detergent, about 20 to 75 percent by weight of a dentally acceptable substantially water-insoluble polishing agent, at least about 0.05 percent by weight of the neutral protease of Bacillus subtilis and a stabilizer for retention of protease activity consisting essentially of about 0.1 to 0.5 percent by weight of a protein having an average molecular weight ranging from about 10,000 up to about 300,000 selected from the group consisting of partially hydrolyzed edible proteins and edible proteins.

4,058,597

ALUMINIUM SALTS OF BETAINE CHLORIDE AND COMPOSITIONS CONTAINING THE SAME

André Henri Passedouet, Maisons-Laffite, and Robert Pipon, Melle, both of France, assignors to Rhone-Poulenc Industries, Paris, France

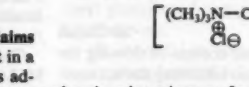
Filed Mar. 9, 1976, Ser. No. 665,242

Claims priority, application France, Mar. 11, 1975, 75.07555

Int. Cl.[2] A61K *7/38*; C07F *5/06*

U.S. Cl. 424—68 **6 Claims**

1. An aluminium salt of the formula:



wherein *a* is an integer from 1 through 4, *b* is an integer from 1 through 5 and *c* is an integer from 1 through 13, the numbers represented by the indices *a*, *b* and *c* being connected by the relationships $3b = a + c$ and the ratio b/a is equal to or greater than 1 and less than or equal to 2.5.

4,058,598

CYTOMEGALOVIRUS ATTENUATION METHOD AND VACCINE

Harold Stern, St. Georges Hospital, University of London, London, S.W.1, England, and Stephen Dyonis Elek, Av. de Cour 155, Lausanne, Switzerland (1007)

Filed Dec. 17, 1974, Ser. No. 533,502

Claims priority, application United Kingdom, Oct. 18, 1974, 45203/74

Int. Cl.[2] A61K *39/12;* C12K *7/00*

U.S. Cl. 424—89 16 Claims

1. A method of preparing an attenuated strain of cytomegalovirus comprising serially passaging at least 40 times a cytomegalovirus isolate in susceptible human fibroblast cell cultures to obtain a virus strain which stimulates the production of complement fixing and neutralising antibodies in susceptible humans, when tested about 10 weeks after the subcutaneous administration of 10^4 $T.C.D._{50}$ units of the strain, without any significant side effects lasting longer than 1 to 2 weeks, or detectable excretions of the virus from the test subjects.

4,058,599

ETHYLENEIMINE INACTIVATED ORGANISMS

Kurt Bauer; Günther Wittman; Manfred Mussgay, all of Tuebingen; Eckart Irion, Wuppertal, and Horst Geilhausen, Bensberg, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 444,483, Feb. 21, 1974, abandoned. This application Sept. 26, 1975, Ser. No. 617,037

Claims priority, application Germany, Feb. 24, 1973, 2309329

Int. Cl.[2] A61K *39/02*

U.S. Cl. 424—92 22 Claims

1. A bacteria suspension to which ethyleneimine has been added such that the concentration of ethyleneimine is 0.005 to 2% V/V, the residual unused ethyleneimine thereafter being destroyed, whereby the bacteria are inactivated without impairment to their antigenicity.

4,058,600

FUNGICIDAL TREATMENT AND COMPOSITION

Jean-Claude Debourge, Courbevoie, and Martine Trochme, Lyon, both of France, assignors to Philagro S.A., France

Filed Apr. 28, 1976, Ser. No. 681,116

Int. Cl.[2] A01N *11/00*

U.S. Cl. 424—128 16 Claims

1. A fungicidal composition for use in controlling fungus disease in plants, containing a fungicidally effective amount of hypophophorous acid or its mineral salts in an agriculturally acceptable vehicle suitable for topical application.

4,058,601

METHOD FOR TREATING ALCOHOLISM

Shun-ichi Hata, Yokohama; Koji Mizuno, Tokorozawa; Yasuho Nishii, Niiza; Etsuko Mitsuishi, Tokyo, and Motoharu Shiba, Ohmiya, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed July 1, 1975, Ser. No. 592,341

Claims priority, application Japan, Nov. 7, 1974, 49-78732

Int. Cl.[2] A61K *31/70*

U.S. Cl. 424—180 16 Claims

1. A method for reducing the alcohol content or slowing the rate of increase thereof in the blood and inhibiting the accumulation of neutral lipid in the liver of human beings, which comprises administering to human beings, orally or parenterally, a pharmaceutical composition comprising an effective amount of a uridine diphosphate as an effective ingredient and a pharmaceutically acceptable carrier.

4,058,602

SYNTHESIS, STRUCTURE, AND ANTITUMOR ACTIVITY OF 5,6-DIHYDRO-5-AZACYTIDINE

John A. Beisler; Mohamed M. Abbasi, both of Bethesda, and John S. Driscoll, Rockville, all of Md., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Aug. 9, 1976, Ser. No. 712,854

Int. Cl.[2] A61K *31/34, 31/53;* C07H *19/12*

U.S. Cl. 424—180 6 Claims

4. A method of inhibiting leukemia L1210 and P388 in mice which comprises utilizing an effective amount of 5,6-dihydro-5-azacytidine as an injectable in a dosage regimen of 6 mg/kg – 600 mg/kg of body weight of the compound 5,6-dihydro-5-azacytidine and a non-toxic acid addition salt thereof wherein such salt is selected from a group consisting of non-toxic mineral acid salts and salts of organic acids selected from one member of a group consisting of maleate, tartrate, citrate, acetate, benzoate, and borate.

4,058,603

INSECTICIDAL AND ACARICIDAL O-ETHYL-O-[1,6-DIHYDRO-1-SUBSTITUTED-6-OXO-PYRIDAZIN(3)YL]-THIONOBENZENEPHOSPHONIC ACID ESTERS

Wolfgang Hofer; Fritz Maurer; Hans-Jochem Riebel, all of Wuppertal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

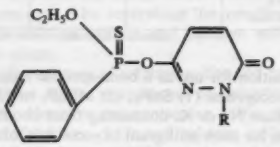
Filed June 24, 1976, Ser. No. 699,542

Claims priority, application Germany, July 12, 1975, 2531340

Int. Cl.[2] A61K *31/50;* C07F *9/65;* A01N *9/36*

U.S. Cl. 424—200 10 Claims

1. An O-ethyl-O-[1,6-dihydro-1-substituted-6-oxo-pyridazin(3)yl]-thionobenzenephosphonic acid ester of the formula



in which

R is alkyl, hydroxyalkyl, halogenoalkyl, cyanoalkyl, carbalkoxyalkyl or carboalkyl, with 1 to 4 carbon atoms in each alkyl radical, phenyl or phenyl substituted by alkyl with 1 to 4 carbon atoms.

8. An insecticidal or acaricidal composition containing as active ingredient an insecticidally or acaricidally effective amount of a compound according to claim 1 in admixture with a conventional pesticide diluent.

4,058,604

USE OF OXIME-ETHERS AS A SYNERGISTICALLY ACTING ADDITIVE TO INSECTICIDALLY AND/OR ACARICIDALLY ACTIVE SUBSTANCES

Henry Martin, Basel, Switzerland; Georg Pissiotas, Loerrach, Germany, and Volker Dittrich, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

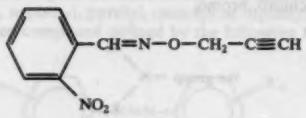
Division of Ser. No. 24,890, April 1, 1970, Pat. No. 3,980,799. This application June 18, 1976, Ser. No. 697,500

Claims priority, application Switzerland, Apr. 14, 1969, 5613/69

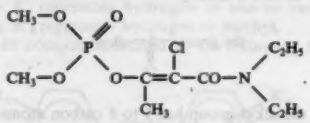
Int. Cl.[2] A01N *9/02, 9/20, 9/36*

U.S. Cl. 424—211 3 Claims

1. An insecticidal and acaricidal composition which comprises substantially equal amounts of (1) the oxime ether of the formula



and (2) the phosphate derivative of the formula



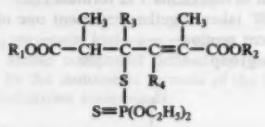
4,058,605

INSECTICIDES FROM DIMETHYLMUCONIC ACID

Richard D. Cassar, West Chester, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

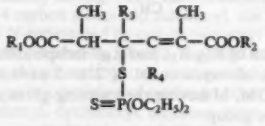
Filed June 11, 1975, Ser. No. 586,101
Int. Cl.[2] A01N 9/36; C07F 9/02
U.S. Cl. 424—212 6 Claims

1. A compound having the formula:



wherein R_1 and R_2 are methyl, or ethyl, and may be the same or different, or one of R_1 and R_2 may be hydrogen, and R_3 and R_4 are methyl or hydrogen, and may be the same or different.

4. An insecticidal composition comprising a minor amount of an insecticidal compound having the formula:



wherein R_1 and R_2 are methyl, or ethyl, and may be the same or different, or one of R_1 and R_2 may be hydrogen, and R_3 and R_4 are methyl or hydrogen, and may be the same or different, and a major amount of a suitable carrier.

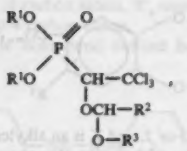
4,058,606

METHOD OF CONTROLLING INSECTS WITH O,O-DIALKYLPHOSPHONIC ACID ESTERS AND THE O,O-DIALKYLPHOSPHONIC ACID ESTERS

Karl Kiehs, Lampertheim; Heinrich Adolphi, Limburgerhof; Rolf Huber, Ludwigshafen, and Annegrit Baumann, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

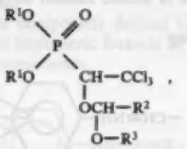
Filed Feb. 26, 1976, Ser. No. 661,797
Claims priority, application Germany, Mar. 25, 1975, 2513126
Int. Cl.[2] A01N 9/36; C07F 9/32
U.S. Cl. 424—217 10 Claims

1. A method of combatting insects wherein the insects are treated with a phosphonic acid ester derivative of the formula



wherein R^1 denotes alkyl of from 1 to 3 carbon atoms, R^2 denotes alkyl of from 1 to 3 carbon atoms, R^3 denotes alkyl of from 1 to 4 carbon atoms, phenyl, or haloalkyl of a maximum of 4 carbon atoms.

5. A phosphonic acid ester derivative of the formula



where R^1 denotes alkyl of from 1 to 3 carbon atoms, R^2 denotes alkyl of from 1 to 3 carbon atoms, R^3 denotes alkyl of from 1 to 4 carbon atoms, phenyl, or haloalkyl of a maximum of 4 carbon atoms.

4,058,607

INSECTICIDE EVAPORATOR COMPRISING A STABILIZER

Claude Hennart, Aubervilliers, and Marcel Louis Dulat, Poitiers, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Continuation-in-part of Ser. No. 380,129, July 17, 1973, Pat. No. 3,962,415, which is a continuation-in-part of Ser. No. 180,507, Sept. 14, 1971, Pat. No. 3,852,439. This application Mar. 30, 1976, Ser. No. 671,982
Int. Cl.[2] A01N 9/36, 9/28, 9/20
U.S. Cl. 424—219 9 Claims

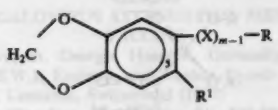
1. An insecticide evaporator comprising:

I. a solid or liquid insecticidal composition containing

A. an insecticidally effective amount of insecticidal phosphate selected from the group consisting of
2,2-dichlorovinyl dimethyl phosphate
2,2-dichlorovinyl diethyl phosphate
2,2-dichlorovinyl dipropyl phosphate
2,2-dibromovinyl dimethyl phosphate
2,2-dibromovinyl diethyl phosphate
2,2-dibromovinyl dipropyl phosphate
2-bromo-2-chlorovinyl dimethyl phosphate
2-bromo-2-chlorovinyl diethyl phosphate
2,2-dichlorovinyl ethyl methyl phosphate
2,2-dichloro-1-methyl-vinyl dimethyl phosphate and
2,2-dichloro-1-methyl-vinyl diethyl phosphate,

wherein on contact with molecules of water at least partial decomposition of the ester takes place by protonization, said vinyl phosphate being or not being admixed with a solid or liquid solvent,

B. about 0.1 to 10%, based on the weight of said volatile phosphate, of a 1,3-benzodioxole capable of stabilizing said phosphate against decomposition by protonization, said benzodioxole having no action as a toxicity synergist for the insecticidal phosphate in said proportions, and selected from the group consisting of at least one compound of the formula



(I)

wherein *m* is 1 or 2, and X is an alkylene bridge of 1 to 2 or an alkylene bridge of 2 carbon atoms, and R′ is

a. hydrogen or

b. lower alkyl and

A. when *m* represents 1 in formula (I) R represents

a. hydrogen

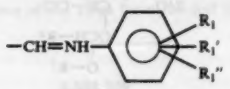
b. lower alkyl

c. lower alkenyl

d. halogen of atomic number not exceeding 17

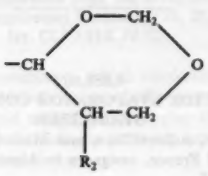
e. nitro

f. the group



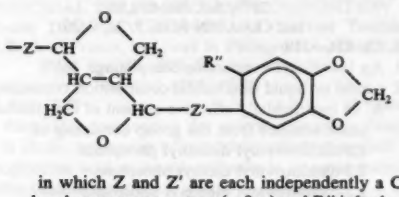
in which each of R_1, R_1' and R_1'', independently of the others, is the same or a different group selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chloro and bromo;

g. the group



in which R_2 is hydrogen or lower alkyl, or

h. the group



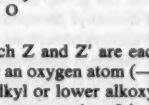
in which Z and Z′ are each independently a C—C bond or an oxygen atom (—O—) and R″ is hydrogen, lower alkyl or lower alkoxy, and

B. when m represents 1 or 2 in formula (I)

R represents

i. cyano

ii. the group



(ii)

wherein R_4 is hydrogen or lower alkyl and R_5 is hydrogen or lower alkyl,

iii. the group —CO-R_6 in which R_6 is

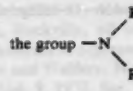
a. hydrogen

b. —OM in which M is hydrogen or an equivalent metal cation or cation or a guaternary ammonium

c. lower alkyl or

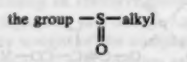
d. lower alkoxy

e. phenyl, unsubstituted or substituted by one or more of the following substituents: lower alkyl, lower alkoxy, chloro, bromo;



(f)

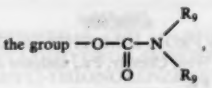
wherein each of R_7 and R_7' is independently selected from hydrogen or lower alkoxy



(iv)

in which the alkyl group has 1 to 8 carbon atoms

v. the group —O—R_8 in which R_8 is lower alkyl or oxa alkyl of at most 15 carbon atoms and 3 oxygen atoms in the chain,



(vi)

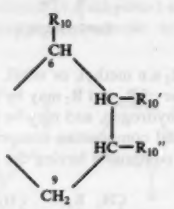
in which each of R_9 and R_9'' independently is hydgrogen, lower alkyl or phenyl or

vii. nitro

C. when m represents 1 in formula (I):

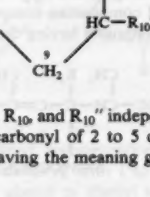
R and R′ taken together represent one of the following divalent groups:

a. the group



in which each of R_{10}, $R_{10'}$ and R_{10}'' independently is hydrogen, lower alkyl, alkoxycarbonyl of 2 to 5 carbon atoms, or the group -COOM, M having the meaning given above, or

b. the group



in which R_{11} is

hydrogen, lower alkyl, lower alkoxy or pyrrolidino, and R_{12} represents

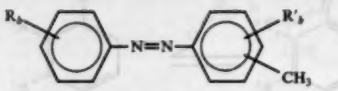
hydrogen or lower alkyl,

C. about 0.1 to 10% by weight based on the weight of said vinyl phosphate of at least one secondary agent for stabilizing said phosphate against decomposition by protonization selected from the group consisting of at least one diazene compound of the formula

1. monoazo compounds defined by the following formula:

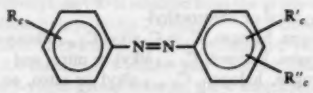
wherein R_a and R'_a are the same or different and each represents phenyl, naphthyl, pyridyl, quinolyl or diphenyl;

2. mono-azo compound defined by the following formula:



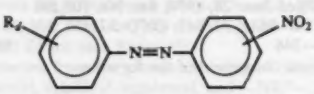
wherein R_b represents hydrogen or one or two methyl radicals, R'_b represents hydrogen or methyl,

3. mono-azo compound defined by the following formula:



wherein R_c represents hydrogen or one or two halogens, R'_c represents halogen, and R''_c represents hydrogen or halogen, halogen being chlorine, bromine, fluorine or iodine,

4. mono-azo compound defined by the following formula:



wherein R_d represents hydrogen or nitro,

5. mono-azo amino compound defined by the following formula or by the tautomeric formula of the corresponding imino-hydrazone compounds:

$$R_e - N = N - R'_e$$

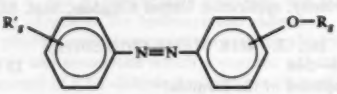
wherein R_e represents a phenyl or naphthyl substituted by one or two amino groups which are unsubstituted or substituted by acetyl or benzoyl, by one or two phenyl or benzyl or by alkyl having 1 to 4 carbon atoms, the radical R_e being unsubstituted or further substituted by one to three substituents selected from the group consisting of alkyl having 1 to 5 carbon atoms, chlorine, nitro, alkoxy having 1 to 3 carbon atoms, alkylsulfonyl having 1 to 4 carbon atoms and sulfamoyl, the latter being unsubstituted or N-substituted by one or two alkyl having 1 to 4 carbon atoms; R'_e represents phenyl, naphthyl or pyrazolyl, unsubstituted or substituted by one to three substituents selected from the group consisting of methoxy, ethoxy, propoxy, methyl, ethyl, phenyl, cyclohexyl, chlorine, nitro and amino, the latter being unsubstituted or substituted by one or two phenyl, benzyl or alkyl having 1 to 4 carbon atoms,

6. mono-azo compounds defined by the following formula or by the tautomeric formula of the corresponding hydrazonoquinone compounds:

$$R_f - N = N - R'_f$$

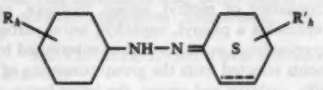
wherein R_f represents phenyl, naphthyl or quinolyl having one or two hydroxy groups and being unsubstituted or substituted by one to three further substituents selected from the group consisting of chlorine, alkyl having 1 to 5 carbon atoms, cyclohexyl, carbamoyl, carboxy and nitro; R'_f represents a phenyl, naphthyl or pyridyl, unsubstituted or substituted by one to four substituents selected from the group consisting of chlorine, cyclohexyl, methyl, hydroxy, nitro, methoxy, benzyloxy, dimethylamino and dimethylaminomethyl,

7. mono-azo compounds defined by the following formula:



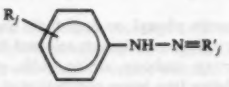
wherein R_g represents alkyl of 1 to 4 carbon atoms or alkanoyl of 2 to 18 carbon atoms, R'_g represents hydrogen or alkoxy of 1 to 4 carbon atoms,

8. phenylhydrazone compound defined by the following formula:



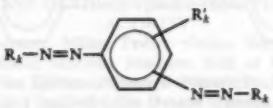
wherein R_h represents hydrogen or one or two substituents selected from the group consisting of chlorine and nitro; R'_h represents hydrogen or one to three alkyl each of 1 to 4 carbon atoms; the dotted line represents an optional second bond,

9. phenylhydrazone compounds defined by the following formula or by the tautomeric formula of the corresponding hydroxyazo compounds:



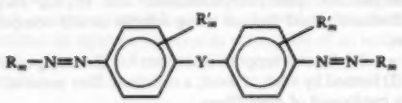
wherein R_j represents one to three substituents selected from the group consisting of alkyl having 1 to 5 carbon atoms, chlorine, nitro, hydroxy, carboxy, sulfo and methylsulfonyl; R'_j represents a 2-indolinon-3-ylidene or a 3,4-dihydro-3-pyrazolon-4-ylidene radical, unsubstituted or substituted by methyl, phenyl, chlorophenyl or sulfophenyl,

10. symmetric compounds defined by the following formula or by the tautomeric formula of the corresponding hydrazonoquinone or iminohydrazone compounds when the disazo compound is described as having hydroxy or amino groups;



wherein R_k represents phenyl unsubstituted or substituted by amino or one or two substituents which are hydroxy or methyl; R'_k represents hydrogen or methyl,

11. symmetric compounds defined by the following formula or by the tautomeric formula of the corresponding hydrazonoquinone or imminohydrazone compounds:



wherein Y represents a direct bond or an oxygen atom or a —CH=CH— group or —CH_2— group or a —CHR''$_m$— group in which R''$_m$ is phenyl or chlorophenyl; R_m represents a phenyl, naphthyl or 5-pyrazolon-4-yl, which is unsubstituted or substituted by one or two substituents selected from the group consisting of methyl, phenyl, hydroxy, amino, sulfo and carboxy; R'$_m$ represents one or two hydrogen or one or two methyl,

12. polyazo compounds defined by the following formula or by the tautomeric formula of the corresponding hydrazonoquinone or iminohydrazone compounds when the disazo compound is defined as having at least one hydroxy or amino group:

$$R_n - N = N - R'_n - N = N - R''_n$$

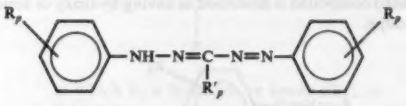
wherein R_n represents phenyl, diphenyl or naphthyl unsubstituted or substituted by one or two substituents selected from the group consisting of methyl, hydroxy, carboxy and sulfo; R'_n represents divalent phenylene or naphthylene, unsubstituted or substituted by one to three substituents selected from the group consisting of methyl, amino, hydroxy, nitro and sulfo; R''_n represents a phenyl, naphthyl, tetrahydronaphthyl or dihydro-pyrimidinyl, unsubstituted or substituted by one to four substituents selected from the group consisting of methyl, hydroxy, sulfo, carboxy and amino, the latter being unsubstituted or substituted by methyl or ethyl, and sulfamoyl unsubstituted or N-substituted by one or two alkyl having 1 to 4 carbon atoms,

13. tris-azo or tetra-azo compounds defined by the following formula or by the tautomeric formula of the corresponding hydrazonoquinone or iminohydrazone compounds when the compound is defined as having at least one hydroxy or amino:

$$R_o - N=N - R'_o - N=N - R''_o - N=N - R'''_o$$

wherein R_o represents phenyl or naphthyl, unsubstituted or substituted by one to four substituents selected from the group consisting of hydroxy, carboxy, amino, sulfo, phenylazo and naphthylazo, the latter two being unsubstituted or substituted by one or two substitutents selected from the group consisting of hydroxy, amino, sulfo and nitro; R'_o represents a divalent, unsubstituted phenylene or diphenylene; R''_o represents a divalent phenylene or naphthylene which is unsubstituted or substituted by one to four substitutents selected from the group consisting of amino, hydroxy and sulfo; R'''_o represents a phenyl or naphthyl unsubstituted or substituted by one or two substitutents selected from the group consisting of amino, hydroxy, and sulfo,

14. formazyl compounds defined by the following formula:



wherein R_p represents hydrogen, methyl or ethyl; R'_p represents phenyl, benzyl, alkyl having 1 to 3 carbon atoms or alkenyl having 2 to 4 carbon atoms,

D. a salt of a compound as defined under (C) above having at least one group capable of salt formation or,

E. a metal complex of a compound or salt as defined under (C) or (D) bearing one or two groups capable of metal complex formation selected from the group consisting of hydroxy, carboxy, amino, mono (C_1–C_4 alkyl) amino, phenylamino, phenylsulphonamino and (C_1–C_4 alkyl) sulfonamido, said diazene being soluble in said composition,

II. a solid fibrous support absorbent for the composition (I) formed by a felt of wool, a cellulosic fiber material or a cardboard of glass fibers.

4,058,608

METHOD OF TREATING FUNGUS-INFECTED PLANTS WITH PHENYLAZOCYANOACETIC ESTER DERIVATIVES

Tibor Zsolnai, Debrecen; György Lugosi, Felsogod; István Szepesi, Debrecen; Maria Bakonyi, Budapest; István Rácz, Budapest, and Erzsébet Radvány nee Hegedüs, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

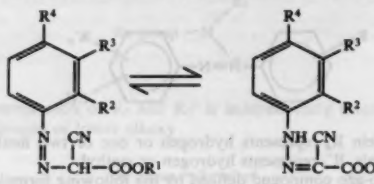
Filed Oct. 20, 1975, Ser. No. 624,774

Claims priority, application Hungary, Oct. 24, 1974, CI 1515

Int. Cl.² A01N *9/20*

U.S. Cl. 424—226 **2 Claims**

1. A method of combatting phytopathogenic fungi which comprises applying to a plant infected with the fungi an effective amount of a compound of the formula:



wherein

R^1 is $C_{1\ to\ 12}$ alkyl or chloroethyl

R^2 is hydrogen, halogen, C_1 to C_4 alkyl $C_{1\ to\ 4}$ alkoxy or nitro,

R^3 is hydrogen, halogen, $C_{1\ to\ 4}$ alkyl or nitro, and

R^4 is hydrogen, halogen, $C_{1\ to\ 4}$ alkyl or nitro, or an acid addition salt thereof effective against fungi.

4,058,609

7-DITHIOACETAMIDO CEPHALOSPORINS

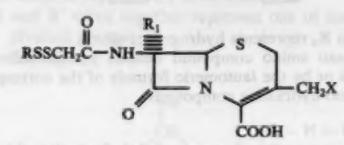
Robert M. DeMarinis, King of Prussia, Pa., assignor to Smith-Kline Corporation, Philadelphia, Pa.

Filed June 28, 1976, Ser. No. 700,290

Int. Cl.² A61K *31/545*; C07D *501/50, 501/28*

U.S. Cl. 424—246 **10 Claims**

1. A chemical compound of the formula:



or a non-toxic pharmaceutically acceptable salt thereof in which:

R is lower alkyl of from 1–4 carbon atoms, trichloromethyl, trifluoromethyl, cyanomethyl, or trifluoroethyl;

R_1 is hydrogen or methoxy;

X is SHet; and

Het is triazolyl, tetrazolyl, oxazolyl, oxadiazolyl, thiazolyl or thiadiazolyl unsubstituted or substituted with one or two substituents comprising lower alkyl of 1 to 4 carbons, mercapto, trifluoromethyl or $(CH_2)_nCOX$ where n is 0 to 5 and X is OH or NH_2.

7. A pharmaceutical composition in dosage unit form having antibacterial activity comprising a pharmaceutical carrier and a chemical compound as defined in claim 1.

9. The method of producing antibacterial activity which comprises administering parenterally to animals requiring said treatment an amount sufficient to produce said activity a chemical compound as defined in claim 1.

4,058,610

7-D-(α-ACYLAMINO-ARYLACETAMIDO)-CEPHALOSPORANIC ACID DERIVATIVES

David A. Cox, and Braham Shroot, both of Canterbury, England, assignors to Pfizer Inc., N.Y.

Division of Ser. No. 635,297, Nov. 26, 1975, Pat. No. 4,006,230, which is a continuation-in-part of Ser. No. 504,381, Sept. 9, 1974, abandoned. This application Sept. 3, 1976, Ser. No. 720,101

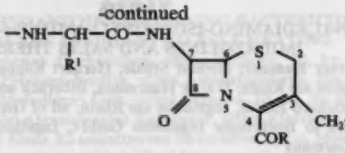
Claims priority, application United Kingdom, Sept. 13, 1973, 43033/73

Int. Cl.² A61K *31/545*; C07D *501/36*

U.S. Cl. 424—246 **13 Claims**

1. A compound of the formula:

-continued



wherein

R^1 is selected from the group consisting of phenyl and substituted phenyl having up to two substituents selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkoxy and trifluoromethyl;

R is hydroxyl; and R^2 is selected from the group consisting of 4,6-dimethylpyrimidin-2-ylthio, 4,5-dimethylthiazol-2-ylthio, 1,3,5-triazin-2-ylthio, pyrimidin-2-ylthio, 2-methyl-1,3,4-thiadiazol-5-ylthio and 1-substituted-1,2,3,4-tetrazol-5-ylthio group wherein the 1-substituent is selected from the group consisting of methyl, benzyl, phenyl, chlorophenyl and methoxyphenyl;

R^3 is selected from the group consisting of sulpho, $COR^{4'}$ wherein $R^{4'}$ is selected from the group consisting of hydrogen and R^4 wherein R^4 is selecgted from the group consisting of lower alkyl, 5-indanyl and substituted phenyl wherein the substituent is selected from the group consisting of lower alkyl and lower alkoxy; $CONR^5R^6$, wherein R^5 and R^6 are each lower alkyl;

X is selected from the group consisting of oxygen, sulphur, carbonyl, sulphinyl, sulphonyl, and $—NR^7—$, wherein R^7 is selected from the group consisting of hydrogen, lower alkyl, allyl and benzyl; and alk^1 and alk^2 each represent a divalent saturated aliphatic hydrocarbon group havng from 1 to 3 carbon atoms; and pharmaceutically acceptable salts thereof.

10. A pharmaceutical composition suitable for treating bacterial infections comprising a compound according to claim **1** and a pharmaceutically acceptable carrier.

13. A method of treating animals to cure them of diseases caused by gram-positive or gram-negative bacteria which comprises administering to the animal an antibacterially effective amount of a compound according to claim **1**.

4,058,611

1,2-DITHIOLE DERIVATIVES

Michel Barreau; Claude Cotrel, both of Paris, and Claude Jeanmart, Brunoy, all of France, assignors to Rhone-Poulenc Industries, Paris, France

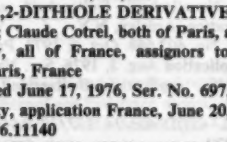
Filed June 17, 1976, Ser. No. 697,157

Claims priority, application France, June 20, 1975, 75.19408; Apr. 15, 1976, 76.11140

Int. Cl.² C07D *409/04;* A61K *31/495*

U.S. Cl. 424—250 **12 Claims**

1. A 1,2-dithiole derivative of the formula:



wherein X_1, X_2 and X_3 represent hydrogen, alkyl of 1 through 4 carbon atoms or alkoxy of 1 through 4 carbon atoms, at least one of X_1, X_2 and X_3 representing hydrogen, and Y represents sulphur or oxygen or the hydroxyimino radical.

12. A pharmaceutical composition useful in the treatment of bilharziasis and amoebiasis which comprises a therapeutically active amount of a 1,2-dithiole derivative as claimed in claim **1** in association with a significant amount of a compatible pharmaceutically acceptable carrier.

4,058,612

6-(POLYHALOISOPROPYL)QUINAZOLINE-2,4-DIONES

Bernard R. Neustadt, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

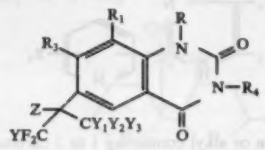
Continuation-in-part of Ser. No. 528,603, Dec. 2, 1974, abandoned. This application May 20, 1976, Ser. No. 688,219

Claims priority, application Switzerland, Nov. 21, 1975, 15164/75

Int. Cl.² A61K *31/505;* C07D *239/96*

U.S. Cl. 424—251 **12 Claims**

1. A quinazoline-2,4-dione of the formula:



(I)

wherein

R_4 is a methyl, ethyl, 2-chloroethyl or 2-bromoethyl group;

R_1 and R_3 are independently hydrogen, fluorine, chlorine, bromine, lower alkyl or lower alkoxy;

Y, Y_1, Y_2 and Y_3 are independently hydrogen, fluorine or chlorine;

Z is hydrogen, chlorine, hydroxy or lower alkanoyloxy; and

R is hydrogen, or alkyl having 1 to 4 carbon atoms.

8. A pharmaceutical composition adopted to treat hypertension comprising an oral dosage of an antihypertensively effective amount of a compound of claim **1** in a pharmaceutically acceptable diluent.

4,058,613

QUINOLINE DERIVATIVES HAVING FUNGICIDAL ACTIVITY

Luigi Abbruzzese, Milan; Franco Gozzo, Saronno (Varese); Giorgio Rossi; Marcella Masoero, both of Milan; Simone Lorusso, San Giuliano Milanese (Milan); Paola Bonola, Milan, and Gino Tamburin, San Donato Milanese (Milan), all of Italy, assignors to Montedison S.p.A., Milan, Italy

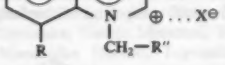
Filed Apr. 15, 1976, Ser. No. 677,248

Claims priority, application Italy, Apr. 15, 1975, 22348/75

Int. Cl.² A01N *9/22*

U.S. Cl. 424—258 **6 Claims**

1. A method for combatting or preventing infections of plants by *Botrytis cinerea pers., Plasmopara Viticola* (B. et C), *Berl et de Toni,* and *Sphaerotheca fulginea* (Schlech) Salmon, which comprises sprinkling on the leaves of the plant to be protected an aqueous solution or suspension of an active antifungal agent which is a quinolinic derivative of the general formula



(I)

wherein:

R = OH or H;

R′ = H or C_1–C_5alkyl;

R″ = H; C_2H_5; or 4 Cl—C_6H_4; and

X = halogen

in such quantities that the amount of the quinolinic derivative deposited on the leaves is equal to or greater than 15 mg/sq cm of leaf.

4,058,614

SUBSTITUTED IMIDAZOLE COMPOUNDS AND THERAPEUTIC COMPOSITIONS THEREWITH

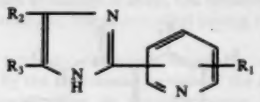
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 421,553, Dec. 4, 1973, abandoned. This application Feb. 18, 1976, Ser. No. 658,955

Int. Cl.[2] A61K *31/415;* C07D *403/02*

U.S. Cl. 424—263 20 Claims

1. A compound of the formula



wherein

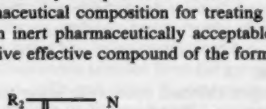
R_1 is hydrogen or alkyl containing 1 to 3 carbon atoms;

R_2 is halogen; and

R_3 is halogen or $-CF_3$

or a pharmaceutically acceptable salt thereof.

7. A pharmaceutical composition for treating hypertension comprising an inert pharmaceutically acceptable diluent and antihypertensive effective compound of the formula



wherein

R_1 is hydrogen or alkyl containing 1 to 3 carbon atoms;

R_2 is halogen; and

R_3 is halogen or $-CF_3$

or a pharmaceutically acceptable salt thereof.

4,058,615

SKELETAL MUSCLE RELAXANT COMPOSITIONS COMPRISING α,α-DIPHENYL-3-TROPIDINEETHANOL AND METHODS OF PRODUCING SKELETAL MUSCLE RELAXATION

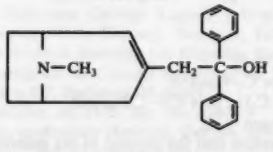
Peter Tone Ridley, Lafayette Hill, and Edwin Frank Weidley, Ridley Park, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Sept. 28, 1976, Ser. No. 727,553

Int. Cl.[2] A61K *31/46*

U.S. Cl. 424—265 2 Claims

1. The method of producing skeletal muscle relaxant activity in abnormal muscle disorders but having no relaxant activity on normal muscle which comprises administering internally to an animal having said disorder an amount sufficient to produce said activity of a chemical compound of the formula:



or a pharmaceutically acceptable acid addition salt of said compound.

4,058,616

2-[N-(1,3-DIAMINO-ISOPROPYL)-AMINO]-4-PHENYL-2-IMIDAZOLINES AND SALTS THEREOF

Werner Kummer; Helmut Stähle; Herbert Köppe, all of Ingelheim am Rhein; Walter Haarmann, Biberach an der Riss, and Richard Reichl, Ingelheim am Rhein, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

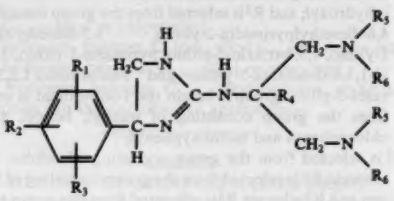
Filed June 3, 1976, Ser. No. 692,325

Claims priority, application Germany, June 10, 1975, 2525725

Int. Cl.[2] A61K *31/445, 31/415;* C07D *233/48, 401/14*

U.S. Cl. 424—267 8 Claims

1. A compound of the formula



wherein

R_1 is chlorine, bromine, fluorine or methyl;

R_2 and R_3 are each hydrogen, chlorine or methyl;

R_4 is hydrogen, methyl or ethyl; and

R_5 and R_6 are each methyl, ethyl or alkoxyalkyl of 2 to 4 carbon atoms or, together with each other and the nitrogen atom to which they are attached, pyrrolidino, piperidino or hexamethyleneimino; or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

8. The method of inhibiting thrombocyte aggregation in a warm-blooded animal in need of such treatment, which comprises perorally or parenterally administering to said animal an effective antithrombotic amount of a compound of claim 1.

4,058,617

IMIDAZOLES AND PHARMACEUTICAL COMPOSITION

Atso Ilvespää, Neuallschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

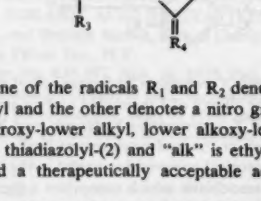
Division of Ser. No. 402,668, Oct. 2, 1973, Pat. No. 3,998,952. This application Aug. 2, 1976, Ser. No. 710,993

Claims priority, application Switzerland, Oct. 4, 1972, 14481/72

Int. Cl.[2] C07D *403/14, 277/38;* A61K *31/38*

U.S. Cl. 424—270 5 Claims

1. An imidazole compound of the formula



(I)

wherein one of the radicals R_1 and R_2 denotes hydrogen or lower alkyl and the other denotes a nitro group, R_3 is lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, R_4 is oxo, R_5 is thiadiazolyl-(2) and "alk" is ethylene, and the N-oxides and a therapeutically acceptable acid addition salt thereof.

5. An antimicrobial pharmaceutical preparation comprising an antimicrobially effective amount of a compound as claimed in claim 1, together with a pharmaceutically usable excipient.

4,058,618

CERTAIN HYDANTOIN CONTAINING BACTERICIDES WHICH ARE RESISTANT TO SELF-HEATING

Viktor Georgievich Ovchinnikov, ulitsa Bazhova, 10, kv. 61; Nadezhda Petrovna Noritsa, ulitsa Avtozavodskaya, 21a, kv. 26; Maria Mefodievna Grib, ulitsa Bazhova, 10, kv. 30, all of Kiev; Nikolai Alexandrovich Kamennov, ulitsa Kievskaya, 20, kv. 28, and Elena Konstantinovna Skvortsova, ulitsa Molodtsova, 8, korpus 2, kv. 131, both of Moscow, all of U.S.S.R.

Filed Nov. 10, 1975, Ser. No. 630,260
Int. Cl.[2] A01N *9/22*
U.S. Cl. 424—273 R 9 Claims

1. A readily water soluble bactericide which is stable to self-heating upon manufacture and storage, said bactercide consisting essentially of 1, 3-dichloro-5,5-dimethylhydantoin in an amount of 19 to 25% by weight; 5,5-dimethylhydantoin in an amount of 10 to 19% by weight; a neutral sodium phosphate in an amount of 7 to 15% by weight; a sodium salt selected from the group consisting of sodium chloride, anhydrous sodium sulphate and a mixture thereof in an amount of 59 to 40% by weight; and a surface-active agent selected from the group consisting of an alkylarylsulphonate, an alkylsulphonate and a mixture thereof in an amount of 5 to 1% by weight.

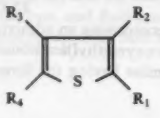
4,058,619

THIOPHENE DERIVATIVES HAVING ANTILIPOLYTIC ACTIVITY

Hanns Ahrens; Helmut Biere; Clemens Rufer; Ralph Schmiechen; Eberhard Schroeder; Olaf Loge; Wolfgang Losert, and Ekkehard Schillinger, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Division of Ser. No. 579,196, May 20, 1975, Pat. No. 4,021,450.
This application Sept. 14, 1976, Ser. No. 723,309
Claims priority, application Germany, May 21, 1974, 2424740
Int. Cl.[2] A61K *31/38*
U.S. Cl. 424—275 14 Claims

1. A pharmaceutical composition in dosage unit form, for inhibiting lypolysis comprising a pharmaceutically acceptable oral or parenteral carrier in admixture with 10 mg to 1g of a thiophene derivative of the formula



wherein one of R_1, R_2, R_3 and R_4 is R_x; 1 or 2 thereof are R_y and the remainder thereof are hydrogen atoms, wherein R_y is alkoxy of 1–6 carbon atoms, and wherein R_x is —S-CH_2-COOH or S-$CH(CH_3)$-COOH, their enantiomers, and their pharmacologically acceptable salts thereof with bases.

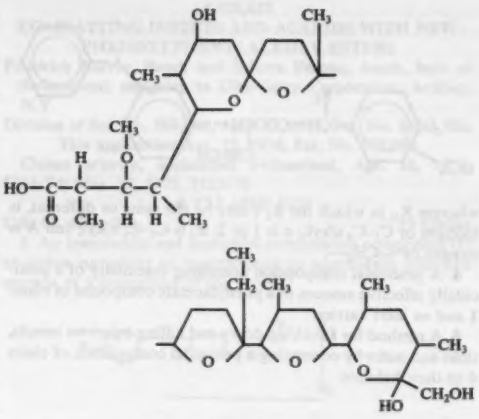
4,058,620

THERAPEUTIC AGENTS FOR IMPROVING CARDIOVASCULAR FUNCTION

John Westley, Mountain Lakes, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 489,977, July 19, 1974, abandoned.
This application Dec. 19, 1975, Ser. No. 642,227
Int. Cl.[2] A61K *31/35*
U.S. Cl. 424—283 1 Claim

1. A method of therapeutic treatment by producing myocardial stimulation in a patient requiring such an effect which comprises administering to the patient an amount, which is effective in producing myocardial stimulation, of monensin, a compound represented by the formula



or pharmaceutically acceptable salts thereof.

4,058,621

IRON COMPLEXES AND FOODSTUFFS CONTAINING THEM

William W. Hill, St. Paul, Minn., assignor to Peter, Strong & Company, Inc., Port Chester, N.Y.

Continuation-in-part of Ser. No. 552,541, Feb. 24, 1975, abandoned, and Ser. No. 565,811, March 31, 1975, abandoned, each is a continuation of Ser. No. 455,873, March 28, 1974, abandoned, which is a continuation of Ser. No. 417,553, Nov. 20, 1973, Pat. No. 3,901,874, Continuation-in-part of Ser. No. 342,393, March 19, 1973, abandoned, which is a continuation of Ser. No. 260,521, June 7, 1972, abandoned, which is a continuation of Ser. No. 39,601, May 22, 1970, abandoned. This application Nov. 10, 1975, Ser. No. 630,437
Int. Cl.[2] A01N *9/00*
U.S. Cl. 424—295 10 Claims

1. A composition containing bioavailable iron, said composition consisting essentially of the monomeric galacturonate or glucuronate reaction product of the components comprising:

b. about one, but no more than about four moles of a water soluble iron salt per equivalent of said component (a), wherein M is a pharmaceutically acceptable cation, and *m* is the valence of M.

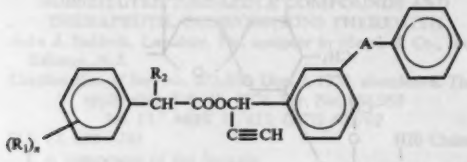
4,058,622

SUBSTITUTED PHENYL ACETATE, INSECTICIDAL COMPOSITION AND METHOD OF USE

Keimei Fujimoto, Kobe; Nobuo Ohno, Toyonaka; Yoshitoshi Okuno, Toyonaka; Toshio Mizutani, Toyonaka; Isao Ohno, Minoo; Masachika Hirano, Toyonaka; Nobushige Itaya, Ikeda, and Takashi Matsuo, Amagasaki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 378,301, July 11, 1973, Pat. No. 3,996,244. This application Mar. 12, 1975, Ser. No. 557,694
Claims priority, application Japan, July 11, 1972, 47-69805; Apr. 19, 1973, 48-44809
Int. Cl.[2] A01N *9/24*; C07C *69/76*
U.S. Cl. 424—308 5 Claims

1. A phenylacetate compound of the formula:



wherein R_1, in which the R_1's may be the same or different, is halogen or C_1–C_4 alkyl,; n is 1 or 2; R_2 is C_1–C_4 alkyl; and A is oxygen or $—CH_2—$.

4. A pesticidal composition consisting essentially of a pesticidally effective amount of a phenylacetate compound of claim 1 and an inert carrier.

5. A method for knocking down and killing injurious insects, ticks and mites by contacting a pesticidal composition of claim 4 to their habitats.

4,058,623

PROSTAGLANDIN-CONTAINING LYOPHILIZED POWDERS

Rolf-Rüdiger Hoffmann, and Peter Fuchs, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Mar. 22, 1976, Ser. No. 669,336
Claims priority, application Germany, Apr. 4, 1975, 2515001
Int. Cl.[2] A61K *31/19, 31/215*
U.S. Cl. 424—317 **19 Claims**

1. A storage-stable lyophilized prostaglandin composition comprising a prostaglandin compound and a decomposition-inhibiting quantity of tris (hydroxymethyl) aminomethane acid addition salts, said composition prior to being lyophilized having a pH of about 5–7, and the acid of said acid addition salts being other than said prostaglandin compound.

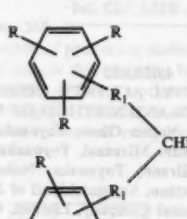
4,058,624

BROAD SPECTRUM ANTIBACTERIAL COMPOSITIONS CONTAINING TRIS (HYDROXYMETHYL)-AMINOMETHANE AND DIPHENYL AND LOWERALKYL SUBSTITUTED DIPHENYL POLYAMINES

David P. Jacobus, Princeton; Eugene L. Dulaney, Summit, and Nathaniel Grier, Englewood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 14, 1976, Ser. No. 686,360
Int. Cl.[2] A01N *9/02, 9/20, 9/22*
U.S. Cl. 424—330 **9 Claims**

1. An antibacterial composition comprising an admixture of 1 to 500 parts by weight of tris(hydroxymethyl)aminomethane for each part by weight of a polyamine having the formula:



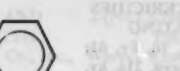
(2)

where

R is hydrogen or loweralkyl;

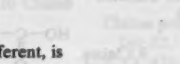
each R_1 is alike or different and is C_1 to C_4 alkylene;

Z is



where

Y is



or Y is $—R_2—$ and

R_2 is 2-hydroxy-1,3-trimethylene, or R_1 as previously defined;

R_3 is hydrogen, C_1 to C_4 alkyl, C_2 to C_4 aminoalkyl, C_1 to C_4 hydroxyalkyl, or C_2 to C_4 dihydroxyalkyl;

R_4 is 2-hydroxy-1,3-trimethylene, or R_1 as previously defined;

R_5 is hydrogen, aminoethyl, aminopropyl, C_1 to C_4 hydroxyalkyl, or C_2 to C_4 dihydroxyalkyl; and

R_6 is hydrogen, C_1 to C_4 hydroxyalkyl or C_2 to C_4 dihydroxyalkyl;

or when R_3 and R_6 taken together are ethylene, R_4 is also ethylene, and R_5 is aminoethyl, aminopropyl, or aminohydroxypropyl or acid addition salts thereof.

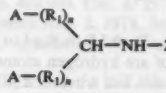
4,058,625

BROAD SPECTRUM ANTIMICROBIAL COMPOSITIONS CONTAINING TRIS-(HYDROXYMETHYL)AMINOMETHANE AND POLYAMINES

David P. Jacobus, Princeton; Eugene L. Dulaney, Summit, and Nathaniel Grier, Englewood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 14, 1976, Ser. No. 686,359
Int. Cl.[2] A01N *9/02, 9/20, 9/22*
U.S. Cl. 424—325 **32 Claims**

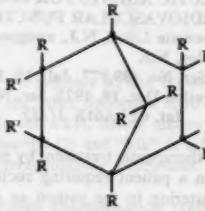
1. An antibacterial composition comprising an admixture of 1 to 500 parts by weight of tris(hydroxymethyl)aminomethane for each part by weight of a polyamine having the formula:



where:

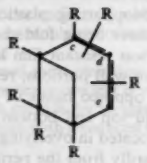
each A is alike or different and is a bicyclic group of the formula:

a.



or a bicyclic group of the formula:

b.

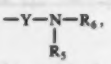


where R is alike or different and is hydrogen or C_1 to C_4 alkyl, R' is alike or different and is hydrogen or C_1 to C_4 alkyl or R' on adjacent carbon atoms taken together comprise an olefinic bond, and the dashed line indicates either saturation or c-, d-, e- unsaturation;

each R_1 is alike or different and is C_1 to C_4 alkylene:

each n is alike or different and is the integer 0 to 1;

Z is

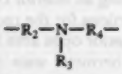


where

R_3 is hydrogen, aminoethyl, aminopropyl, C_1 to C_4 hydroxyalkyl or C_2 to C_4 dihydroxyalkyl; and

R_6 is hydrogen, C_1 to C_4 hydroxyalkyl or C_2 to C_4 dihydroxyalkyl;

Y is either



or $-R_2-$where

R_2 is 2-hydroxy-1,3-trimethylene, or R_1 as previously defined;

R_3 is hydrogen, C_1 to C_4 alkyl, C_1 to C_4 aminoalkyl, C_1 to C_4 hydroxyalkyl or C_2 to C_4 dihydroxyalkyl;

R_4 is 2-hydroxy-1,3-trimethylene, or R_1 as previously defined;

or when R_3 and R_6 taken together are ethylene, R_4 is also ethylene, and R_5 is aminoethyl, aminopropyl or aminohydroxypropyl, or acid addition salts thereof.

4,058,626

COMPOSITION AND METHOD FOR KILLING SNAILS AND SLUGS

Willy Roth, Strengelbach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 24, 1976, Ser. No. 726,096

Claims priority, application Switzerland, Sept. 29, 1975, 12585/75

Int. Cl.² A01N *9/24*; C07C *87/68*

U.S. Cl. 424—333 **10 Claims**

1. A composition toxic to snails and slugs which comprises an amount of metaldehyde which is effective as the active toxic ingredient and an amount of benzyldiethyl-(2,6-xylylcarbamoylmethyl)-ammonium benzoate which is effective as the organoleptic denaturant.

4,058,627

COMBATTING INSECTS AND ACARIDS WITH NEW PHENOXYPHENYLALKOXY ESTERS

Friedrich Karrer, Basel, and Saleem Farooq, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

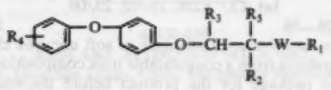
Division of Ser. No. 569,040, April 17, 1975, Pat. No. 3,963,786. This application Apr. 19, 1976, Ser. No. 678,020

Claims priority, application Switzerland, Apr. 18, 1974, 5364/74; Mar. 12, 1975, 3123/75

Int. Cl.² A01N *9/24*

U.S. Cl. 424—341 **19 Claims**

1. An insecticidal and acaricidal composition comprising (1) as active ingredient an insecticidally or acaricidally effective amount of a compound of the formula



wherein

W represents oxygen or sulphur;

R_1 represents C_1—C_6 alkyl, C_3—C_6 cycloalkyl, C_5 or C_6 cycloalkenyl, C_2—C_4 haloalkenyl, C_3—C_5 alkinyl, C_2—C_4 alkenyl or benzyl;

R_2 represents hydrogen, methyl or ethyl;

R_3 represents hydrogen or methyl; or

R_2 and R_3 taken together with the chain represent a 5- or 6-membered saturated ring; and

each of R_4 and R_5 represents hydrogen or methyl; and (2) a carrier.

4,058,628

DISINFECTANT COMPOSITION COMPRISING PINANOL

Frank A. Mitch, Jacksonville, Fla., assignor to SCM Corporation, New York, N.Y.

Filed Sept. 30, 1976, Ser. No. 728,259

Int. Cl.² A01N *9/24*; A61L *13/00*

U.S. Cl. 424—343 **7 Claims**

1. A disinfectant composition for inhibiting enteric microorganisms comprising:

a germicidally effecive amount of pinanol;

a soap; and

an aqueous carrier, said soap being in a proportion for providing a stable aqueous dispersion of said pinanol in said aqueous carrier.

4,058,629

POLYHYDROXYL MONOSULFOXIDE SHAMPOO COMPOSITIONS

Guy Vanlerberghe, Montjay-la-Tour, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

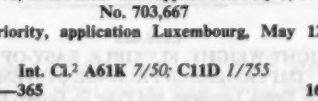
Division of Ser. No. 563,459, March 31, 1975, Pat. No. 3,984,480, Continuation of Ser. No. 372,103, June 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 142,410, May 11, 1971, abandoned. This application July 8, 1976, Ser. No. 703,667

Claims priority, application Luxembourg, May 12, 1970, 60899

Int. Cl.² A61K *7/50*; C11D *1/755*

U.S. Cl. 424—365 **16 Claims**

1. A composition for use as a shampoo or foamable bath composition comprising an aqueous solution of at least one compound having the formula



wherein R is selected from the group consisting of linear or branched, saturated or unsaturated hydrocarbon having 8 to 22 carbon atoms, alkylbenzyl having 8 to 22 carbon atoms, and a mixture thereof, and *n* has a statistical mean value of 2 to 10, said compound being present in an amount of 1 to 80 percent by weight of said composition.

4,058,630

MANUFACTURE OF WHITE CHEESE OR YOGURT

Bernadette Corbic Corbic nee Busnel, Carrieres-sur-Seine, France, assignor to Societe: Toscara Anstalt, Vaduz, Liechtenstein

Division of Ser. No. 535,843, Dec. 23, 1974, Pat. No. 4,003,490.
This application July 6, 1976, Ser. No. 702,609
Claims priority, application France, Jan. 9, 1974, 74.00718
Int. Cl.[2] A23C *19/02, 23/00*
U.S. Cl. 426—36 **3 Claims**

1. A process for the manufacture of soft uncured cheese or yoghurt products from a coagulatable milk composition placed in the final package for the product before the end of the manufacturing process, comprising the steps of:

providing a container having side walls defined at one end thereof a sealable filling and removal opening and a divider mounted therein at least partly engaging the side walls and dividing the interior of the container into a first small chamber and a second larger chamber and wherein the edges of said divider cooperate with said side walls to define passages therebetween providing communication between said two chambers, said passages being of a predetermined size to prevent coagulated milk composition from passing therethrough;

introducing a coagulatable milk composition into said container in an amount at most equal to the volume of the second chamber;

sealing the opening of the container with a liquid tight seal;

placing the container in a first position such that all of the milk composition introduced therein accumulates and remains in the second chamber until the milk composition has coagulated and decomposed into curds and serum, and thereafter draining the serum from said second chamber into said first chamber via said passages, by changing the orientation of the container and placing it in a second position.

4,058,631

ENZYME-TREATED FRIED FOOD

Charles F. Roan, Lake Geneva, Wis., assignor to GB Fermantation Industries, Inc., Kingstree, S.C.

Filed Aug. 31, 1972, Ser. No. 285,289
Int. Cl.[2] A23B *7/10*
U.S. Cl. 426—52 **2 Claims**

1. A process of reducing the absorption of fat during frying of French fried potatoes and improving the flavor and texture of said potatoes comprising soaking the raw potato pieces prior to frying in an aqueous enzyme solution containing from about 0.1% to about 1% by weight of alpha amylase having an activity equivalent to about 10,000 to about 20,000 Bacterial Amylase Units per gram of enzyme for about 15 minutes to about one hour at ambient room temperatures and thereafter frying said potato pieces.

4,058,632

LIGHT-WEIGHT, FLEXIBLE, EASY-OPEN, IMPERMEABLE PACKAGE SYSTEM

Albert E. J. Evans, Levedean, and Peter G. Turner, Bordon, both of England, assignors to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Continuation of Ser. No. 533,423, Dec. 16, 1974, abandoned.
This application Oct. 12, 1976, Ser. No. 731,164
Int. Cl.[2] B65D *5/42*
U.S. Cl. 426—126 **2 Claims**

1. A light-weight, flexible, easy-open, impermeable package containing water or air sensitive materials, said package being produced from a porefree metal foil sheet, said sheet having a heat resistant package-supporting plastic film on the outer surface thereof; said sheet being folded upon itself along a median line with the heat resistant film located exteriorly to provide top and bottom wall portions; relatively narrow and continuous peripheral opposed bands of solder on the inner surface of each of said top and bottom wall portions, said opposed bands being located in overlying mating relationship and being spaced inwardly from the peripheral edges of said top and bottom wall portions; thermoplastic film coatings on said facing top and bottom wall portions in a pattern of two concentric rectangles on each of said facing top and bottom wall portions corresponding to areas interiorly and exteriorly

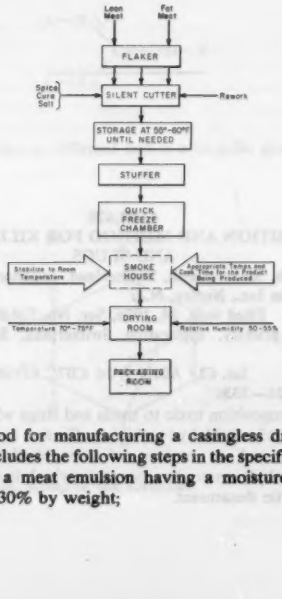
of said peripheral bands of solder; said two concentric rectangles on each of said portions being in overlying mating relationship; said opposed bands of solder being sealed to each other providing a complete metal seal through the top and bottom foil sheets; and said thermoplatstic coatings being sealed to each other providing a thermoplastic peripheral seal through said top and bottom wall portions on each side of said solder bands seal providing an interior open area between said top and bottom wall portions for the reception of the material being packaged, said interior open area being surrounded by a plurality of concentric hermetic seals including a peripheral thermoplastic seal, an intermediate solder seal, and an inner thermoplastic seal.

4,058,633

MEAT PRODUCT, AND PROCESS FOR PREPARING SAME

Charles H. Staff, Omaha, Nebr.; Gale F. Kunert, San Ramon, Calif., and Tom A. Christians, Council Bluffs, Iowa, assignors to Fairmont Foods Company, Omaha, Nebr.

Filed Sept. 15, 1976, Ser. No. 723,627
Int. Cl.[2] A22C *11/00;* **A23B** *4/04*
U.S. Cl. 426—315 **16 Claims**



1. The method for manufacturing a casingless dried meat product that includes the following steps in the specified order:

a. preparing a meat emulsion having a moisture content exceeding 30% by weight;

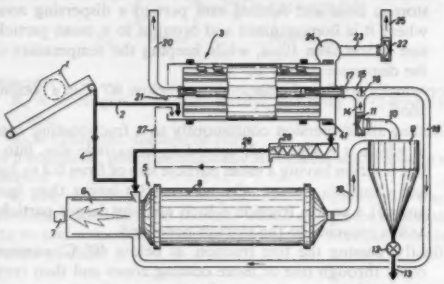
b. forming said meat emulsion into the desired cross sectional shape;
c. freezing at least the surface of said meat emulsion;
d. allowing said meat emulsion to become stabilized at room temperature; and
e. drying said formed meat emulsion at temperatures above 40° F. until its moisture content is reduced to the range of from about 10% to 15% by weight to prepare a finished dried meat product with a reduced tendency to oil-off and salt-out.

4,058,634

METHOD FOR DRYING AGRICULTURAL FEED MATERIALS, PULP-LIKE MATERIALS

Werner Kunz, Lenzburg, Switzerland, assignor to W. Kunz AG, Dintikon, Switzerland

Filed Mar. 31, 1976, Ser. No. 672,060
Claims priority, application Switzerland, Apr. 1, 1975, 4094/75
Int. Cl.[2] A23N *1/00*; A23L *1/20*
U.S. Cl. 426—456 3 Claims



1. A method for drying agricultural feed material in a drying apparatus using the juice of an earlier pressing comprising the steps of:
feeding the material to the input of a predrying heat exchanger;
moistening the material prior to predrying with juice of an earlier pressed material;
passing the premoistened material through said heat exchanger heated with the exhaust aid of a main drying unit;
pressing the juice from said material after said material leaves the heat exchanger; returning the pressed juice to the input side of the heat exchanger; and
feeding the predried and pressed material into a main dryer for final drying.

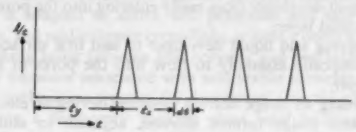
4,058,635

METHOD OF TREATING A FOODSTUFF IN AN OVEN WITH MOISTURE

Wilfried Durth, Burbach-Wahlbach, Germany, assignor to Buderus'sche Eisenwerke Aktiengesellschaft, Wetzlar, Germany

Continuation-in-part of Ser. No. 376,447, July 5, 1973, abandoned. This application Dec. 5, 1975, Ser. No. 638,158
Claims priority, application Germany, July 12, 1972, 2234107
Int. Cl.[2] A23L *1/01*
U.S. Cl. 426—509 2 Claims

1. A method of treating a foodstuff comprising the steps of:
confining said foodstuff in a substantially closed chamber;
circulating air in said chamber over and into contact with said foodstuff;
heating said air, said foodstuff being heated by said air at a temperature and for a time sufficient to cook said foodstuff; and
intermittently and automatically adding moisture to the heated air in said chamber in pulses spaced apart by intervals said moisture being added periodically by injecting water into said air circulating in said chamber, said air being circulated so as to pass over said foodstuff a plurality of times during the treatment thereof, and said pulse



duration being between 0.3 seconds and 1.2 seconds and said intervals being each between 0.25 minutes and 2 minutes.

4,058,636

INSTANT ACIDIFIED MILK GEL

Robert S. Igoe, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 620,899, Oct. 8, 1975, abandoned. This application Oct. 26, 1976, Ser. No. 735,557
Int. Cl.[2] A23L *1/04, 1/09*
U.S. Cl. 426—573 7 Claims

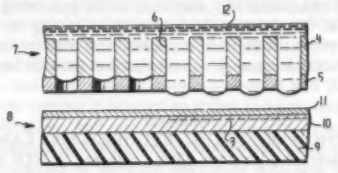
1. A dry composition which contains a thickener composition, a carbohydrate sweetener and a food acidulent for preparing an instant acidified milk gel product, the dry composition consisting essentially of from about 2.5 weight % to about 10 weight % thickener composition, from about 80 weight % to about 93 weight % carbohydrate sweetener, and an amount of food acidulent effective to adjust the pH of the composition to from about 3.8 to about 4.3 when blended with an amount of milk effective to form a gel, the thickener comprising carboxymethyl cellulose, xanthan gum and locust bean gum, the thickener ingredients being present in the following percentages by weight of the thickener: xanthan gum, from about 20% to about 35%; locust bean gum, from about 20% to about 35%; and carboxymethyl cellulose, from about 30% to about 60%.

4,058,637

ELECTROSTATIC DEVELOPING METHOD

Genji Ohno, Yokohama, Japan, assignor to Research and Development Laboratories of Ohno Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 398,962, Sept. 20, 1973, abandoned, Division of Ser. No. 227,025, Feb. 17, 1972, Pat. No. 3,894,512. This application Aug. 13, 1975, Ser. No. 604,098
Claims priority, application Japan, Feb. 18, 1971, 46-7076
Int. Cl.[2] G03G *13/10*
U.S. Cl. 427—15 3 Claims



1. A method of electrostatically printing an original image with a liquid developer onto an image bearing medium which comprises the steps of:
providing a composite assembly having opposite facing first and second surfaces respectively defined by a first layer, which is hydrophilic with respect to said liquid developer, and a second layer which is hydrophobic with respect to said liquid developer and disposed upon said first layer to form said composite assembly, said composite assembly

having a plurality of uniformly distributed fine pores extending therethrough from said first surface to said second surface, the size of said fine pores are in the range of 10μ to 100μ, the thickness of said second layer being in the range of 3μ to 400μ and so selected as to prevent said liquid developer from easily entering into the pores of said second layer;

supplying said liquid developer to said first surface of said composite assembly to flow into the pores of said first layer;

disposing an image bearing medium, having an electrostatic latent image formed thereon, adjacent to said second surface on said composite assembly so that portions of said second surface of said composite assembly are exposed to the electric field emanating from said electrostatic latent image formed on corresponding portions of said image bearing medium thereby causing the liquid developer in pores of said first layer to wet the inside surfaces of corresponding ones of the pores of said second layer in said exposed portions to flow therethrough and to exude onto said exposed portions of second surface thereof; and

contacting said image bearing medium with said composite assembly to transfer the liquid developer on said exposed portions of said second surface of said composite assembly onto said electrostatic latent image formed on corresponding portions of said image bearing medium.

4,058,638

METHOD OF OPTICAL THIN FILM COATING

Dale E. Morton, Farmers Branch, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 534,327, Dec. 19, 1974, Pat. No. 3,955,662. This application Nov. 3, 1975, Ser. No. 628,015

Int. Cl.² B05D *3/06*

U.S. Cl. 427—39 **5 Claims**

1. A process for depositing an optical thin film coating on a substrate comprising the steps of:

exposing said substrate in an evacuated chamber to an atmosphere containing arsine and a volatile gallium compound, while generating an RF field having an energy sufficient to yield a plasma at the substrate surface, thereby depositing a gallium arsenide coating on said substrate;

then, without breaking said vacuum, exposing said coated sustrate to an atmosphere containing hydrogen sulfide and a zinc compound vapor while generating an RF field at the substrate surface having an energy sufficient to cause deposition of a zinc sulfide layer on said gallium arsenide coating;

then, without breaking said vacuum, exposing said zinc sulfide layer to vapors of thorium flouride thereby forming a thorium flouride layer on said zinc sulfide layer;

then, without breaking said vacuum, exposing said thorium flouride layer to an atmosphere containing a volatile boron compound and ammonia, while generating an RF field at the thorium flouride surface having an energy level sufficient to yield a plasma, and thereby deposit a boron nitride coating on said thorium fluoride layer.

4,058,639

METHOD OF MAKING FLUORESCENT LAMP

Willy P. Schreurs, Danvers, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 9, 1975, Ser. No. 639,029

Int. Cl.² B05D *1/36, 5/06, 7/22*

U.S. Cl. 427—67 **4 Claims**

1. The process of manufacturing a fluorescent lamp of the type having a protective coating on the inner surface of the lamp envelope and a phosphor coating deposited on the protective coating comprising the steps of preparing a dispersion of finely powdered alumina in a solution of nitrocellulose in a highly polar solvent, the dispersion containing no phosphor, applying said dispersion to the inner surface of the lamp envelope to form said protective coating, drying said protective coating and depositing said phosphor coating thereon without first lehring the protective coating.

4,058,640

ELECTRICAL INSULATION OF METALLIC CONDUCTORS

Hans Jung, Ludwigshafen; Jenoe Kovacs, Bobenheim-Roxheim; Wilhelm Dissel, Ludwigshafen, and Helmut Lehmann, Reinbek, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 7, 1976, Ser. No. 684,308

Claims priority, application Germany, May 24, 1975, 2523099

Int. Cl.² B05D *7/20, 5/12, 3/02, 1/42*

U.S. Cl. 427—118 **1 Claim**

1. A process for the electrical insulation of metallic conductors by coating wires with aqueous dispersions, of from 10 to 60 percent by weight, of polymeric organic coating materials, which process comprises the following steps which are carried out in a single cycle:

introducing a starting dispersion of the coating material into a storage zone;

continuously withdrawing a part of the dispersion from the storage zone and feeding said part to a dispersing zone where it is homogenized and brought to a mean particle size of less than 10μu, while keeping the temperature of the dispersion below 60° C;

optionally cooling the dispersion to below 40° C in a cooling zone;

feeding the dispersion continuously to a fractionating zone in which it is separated, according to particle size, into a fine fraction having a mean particle size of from 0.2 to 2μu and containing practically no particles larger than 6μu, and (b) a coarse fraction which contains larger particles and is recycled to the storage zone; and

finally, passing the fine fraction, at below 40° C, continuously through one or more coating zones and then recycled to the storage zone, and at the same time one or more wires of diameter greater than 0.05 mm are drawn through coating zones(s) and provided with a coating which is then baked where one or more wires having a diameter greater than 0.05 mm are drawn through said coating zone(s) and coated therein, which coating is then baked, the excess of the film fraction of the aqueous dispersion being recycled to the storage zone.

4,058,641

PAVEMENT MARKING METHOD

Olexander Hnojewyj, Columbia Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 2, 1976, Ser. No. 702,336

Int. Cl.² B05C *1/16;* **B05D** *5/10*

U.S. Cl. 427—137 **9 Claims**

1. In a method for making a paved roadway surface without first severely cleaning the surface comprising coating onto the surface a thin bonding layer of low-viscosity liquid coating composition which wets the paved surface and then rapidly advances to a nonspreading form, heating the paved surface and the bonding layer, projecting toward the heated layer a topcoat material that comprises a continuous stream of solid individual particles having an organic thermoplastic phase that comprises a polyamide condensation product of dimerized fatty acid and polyamine, and heating the particles so as to cause at least a major portion of the organic thermoplastic phase of the particles to soften before they reach the bonding layer; the improvement which comprises using as the liquid coating composition a material that has a room-temperature viscosity of less than about 1000 centipoises and comprises 100 parts of a thermoplastic polyamide condensation product of a dimerized fatty acid and an amine; and at least 50 parts of volatile solvent in which said condensation product is dissolved; the bonding layer formed by said liquid coating com-

position having an evaporation rate of at least 0.02 gram/square centimeter/hour at a temperature of 24° C and a relative humidity of 50%.

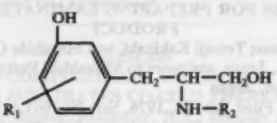
4,058,642

2-AMINO-3-(3'-HYDROXY-PHENYL)-PROPANOLS AND SALTS THEREOF

Ernst-Otto Renth; Anton Mentrüp; Kurt Schromm, and Alexander Walland, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Continuation-in-part of Ser. No. 512,207, Oct. 4, 1974, abandoned. This application Nov. 30, 1976, Ser. No. 746,110
Claims priority, application Germany, Oct. 11, 1973, 2351027
Int. Cl.[2] A01N *9/20, 9/24;* **C07C** *91.22*
U.S. Cl. 424—330 **8 Claims**

1. A racemic mixture or optically active antipode of a compound of the formula



wherein

R_1 is hydrogen, chlorine, methyl, methoxy or 5-hydroxyl, and

R_2 is hydrogen, methyl or ethyl,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

8. The method of increasing the blood pressure of a warm-blooded animal in need thereof, which comprises administering to said animal an effective hypertensive amount of a compound of claim 1.

4,058,643

FIRE RETARDANT LAMINATES HAVING INTUMESCENT ADHESIVE LAYER COMPRISING SHELLAC

Jeffrey D. Marshall, Palmyra, and Milton C. Kuklies, Fairport, both of N.Y., assignors to Mobile Oil Corporation, New York, N.Y.

Filed June 21, 1976, Ser. No. 698,387
Int. Cl.[2] A62D *1/00;* **B32B** *7/14, 9/02, 17/06;* **C09D** *3/40, 5/18*
U.S. Cl. 428—198 **9 Claims**

1. A laminate construction comprising a plastic film layer bonded, with an intumescent adhesive coating composition, to an insulation batting layer, said adhesive composition comprising a mixture of shellac, a phosphoric acid salt and a blowing agent said adhesive coating, when exposed to elevated temperatures, swells by foaming to form a protective multicellular char layer.

7. An adhesive coating composition comprising a mixture of shellac, a phosphoric acid salt, and a blowing agent.

4,058,644

SUBLIMATION TRANSFER AND METHOD

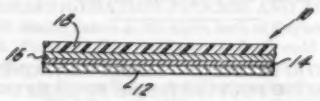
Roy F. DeVries, 30 Crosby Lane, Oakland, N.J. 07436, and William H. Snyder, 11 Cannon Blvd., Staten Island, N.Y. 10306

Continuation-in-part of Ser. No. 529,449, Dec. 4, 1974, Pat. No. 4,021,591. This application Apr. 5, 1976, Ser. No. 673,692
Int. Cl.[2] B32B *7/12;* **D06P** *3/60, 5/06*
U.S. Cl. 428—200 **20 Claims**

1. A sublimation transfer for decorating a textile substrate comprising a temporary backing sheet, said backing sheet having deposited thereon a sublimation transfer design layer comprising a sublimation transfer ink having a sublimation point between about 100° and 300° C. and a polymeric layer disposed in contact with said design layer, said polymeric layer having a thickness of between about 0.4 and 4 mils and comprising a polymer having a number average molecular weight of between about 700 and 20,000, and having at least 3 functional groups comprising isocyanates for each polymer chain thereof, whereby upon application of said sublimation transfer to said textile substrate under heat and pressure, said polymeric coating is adapted to soften and penetrate into said textile substrate, and said polymer cross-links, at least a portion of said cross-linking being between said polymer and said textile substrate or moisture associated with said textile substrate.

14. A sublimation transfer for decorating a textile substrate comprising a temporary backing sheet, said backing sheet having deposited thereon a sublimation transfer design layer comprising a sublimation transfer ink having a sublimation point between about 100° and 300° C., and a polymeric layer disposed in contact with said design layer, said polymeric layer having a thickness between about 0.4 and 4 mils and a number average molecular weight of between about 1,200 and 15,000, and having at least 3 functional groups comprising isocyanates for each polymer chain thereof, said polymer comprising a blocked isocyanate functional polyurethane, whereby upon the application of said sublimation transfer to said textile substrate under heat and pressure, said polymeric coating is adapted to soften and penetrate into said textile substrate, and said blocked isocyanate groups unblock or become reactive, so that said polymer cross-links, at least a portion of said cross-linking being between said polymer and said textile substrate or moisture associated with said textile substrate.

17. A method for decorating a textile substrate with a design comprising one or more sublimation inks, which method comprises the steps of providing a dry release sublimation transfer comprising a temporary backing sheet, said backing sheet having deposited thereon a sublimation transfer design layer comprising a sublimation transfer ink having a sublimation point between about 100° and 300° C., and a polymeric layer disposed in contact with said design layer, said polymeric layer having a thickness of between about 0.4 and 4 mils and comprising a polymer having a number average molecular weight of between about 700 and 20,000, and having on the average at least 3 blocked functional groups comprising isocyanates for each polymer chain thereof, whereby upon application of said sublimation transfer to said textile substrate, under heat and pressure including a temperature of between about 200° and 450° F. and a pressure of between about 2 and 100 psi said polymeric coating is adapted to soften and penetrate into said textile substrate, and said polymer cross-links, at least of portion of said cross-linking being between said polymer and said textile substrate or moisture associated with said textile substrate, positioning said dry release sublimation transfer on a textile substrate to be decorated with said temporary backing sheet disposed away from said textile substrate, applying heat and pressure to said dry release sublimation transfer, thereby causing said polymeric layer to soften and penetrate into said substrate, while releasing said temporary backing sheet from said design layer, thereby cross-linking said isocyanate functional groups with said textile or said moisture associated with said textile and cooling said design layer and polymeric coating whereby said polymeric coating is securely embedded in said textile substrate.



4,058,645

HEAT SEALABLE THERMOPLASTIC FILMS

Robert Henry Steiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 391,177, Aug. 24, 1973, abandoned. This application Mar. 29, 1976, Ser. No. 671,473

Int. Cl.[2] B32B *5/16, 27/08*

U.S. Cl. 428—331 5 Claims

1. A polyolefin film substrate having a surface coating of a heat sealable composition consisting of an interpolymer as the film forming agent of (a) from about 2.5 to about 6 parts by weight of an α-β monoethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof, and (b) from about 97.5 to about 94 parts by weight of neutral monomer esters, said neutral monomer esters comprising (1) methyl acrylate or ethyl acrylate and (2) methyl methacrylate, said interpolymer comprising from about 30% to about 55% by weight of methyl methacrylate when said alkyl acrylate is methyl acrylate, and from about 52.5% to about 69% by weight of methyl methacrylate when said alkyl acrylate is ethyl acrylate; said interpolymer coating being further characterized as containing (1) from about 30% to about 60% by weight based upon the total weight of said interpolymer, of a hot slip agent consisting of a finely-divided, water-insoluble, inorganic solid selected from the group consisting of silica, diatomaceous earth, calcium silicate, bentonite and finely-divided clays, said inorganic solid having a particle size between about 10 and about 200 millimicrons, and (2) said interpolymer coating being further characterized by containing a cold-slip, anti-blocking material comprising finely-divided wax, (3) said coating additionally containing from about 3 to about 15% by weight based on the weight of the acrylic terpolymer coating component of a compound selected from the group consisting of an adduct of rosin and an alpha-beta unsaturated dicarboxylic acid and the partial esters of said adduct and polyhydric alcohol.

4,058,646

MAGNETIC RECORDING MEDIA CONTAINING ELASTOMERIC POLYURETHANE BINDERS IN THE MAGNETIC COATING

Guenter Vaeth, Limburgerhof; Rudolf Bachmann, Frankenthal; Heinrich Hartmann, Limburgerhof; Hans-Joerg Hartmann, Freinsheim; Herbert Spoor, Limburgerhof; Karl Uhl, Frankenthal; August Lehner, Roedersheim-Gronau; Winfried Gutermann, Bad Duerkheim, and Herbert Motz, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sept. 2, 1975, Ser. No. 609,561

Claims priority, application Germany, Sept. 6, 1974, 2442762

Int. Cl.[2] H01F *10/02*

U.S. Cl. 428—425 10 Claims

1. A magnetic recording medium comprising a non-magnetic base and, applied thereto, a firmly adhering magnetic coating consisting essentially of a dispersion of a magnetic pigment in a binder which contains at least 50 percent by weight of a thermoplastic polyurethane which is soluble in tetrahydrofuran, is free from isocyanate groups, has high surface hardness and a high modulus of elasticity and which has been made by reaction of (A) 1 mole of one or more hydroxyl-containing polyesters and/or one or more hydroxyl-containing polyethers having a molecular weight of from 600 to 4,000, wherein said hydroxyl-containing polyester is formed by esterification of aliphatic dicarboxylic acids of 4 to 12 carbon atoms, carboxylic acid esters of 1 to 4 carbon atoms in the alcohol radical, carboxylic acid anhydrides or carboxylic acid chlorides with aliphatic glycols of 2 to 12 carbon atoms which may contain ether groups, or by polymerization of cyclic lactones of 3 to 6 carbon atoms and wherein said hydroxyl-containing polyether is formed by polymerization of cyclic ethers or by reaction of one or more alkylene oxides of 2 to 4 carbon atoms in the alkylene oxide radical with a starter molecule which contains two active hydrogen atoms, in the presence as a chain extender of (B) from 3.5 to 15 moles of a branched-chain aliphatic diol containing from 4 to 10 carbon atoms or a mixture of aliphatic diols containing from 2 to 10 carbon atoms, of which diol mixture at least 50 mole percent is branched-chain and contains from 4 to 10 carbon atoms and (C) from 0 to 1 mole, but not more than 15 mole percent on the basis of the aforesaid aliphatic diol(s) of an aliphatic polyol containing from 3 to 6 hydroxy groups and from 3 to 18 carbon atoms, which (D) from 4.5 to 18 moles of an aromatic diisocyanate containing from 6 to 30 carbon atoms, the amount of isocyanate groups present in the reaction being approximately equivalent to the amount of hydroxy groups in the components A to C.

4,058,647

PROCESS FOR PREPARING LAMINATED RESIN PRODUCT

Takayuki Inoue; Tetsuji Kakizaki, and Masahide Ochiumi, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1976, Ser. No. 661,413

Claims priority, application Japan, Feb. 27, 1975, 50-24255; July 25, 1975, 50-90940

Int. Cl.[2] B32B *27/34, 25/00*; C09J *7/00*

U.S. Cl. 428—474 11 Claims

1. In a process for preparing a laminated resin product by melt-laminating (1) a modified polyolefin composition with (2) a polyester, a polyamide or a hydrolyzed copolymer of ethylene-vinylacetate, the improvement comprising: laminating a layer of said polyester, polyamide or hydrolyzed copolymer or ethylene-vinyl-acetate with a layer of said modified polyolefin composition comprising a mixture of 60 -97 wt.% of a polyolefin which comprises from 0.1 to 100 wt.% of a polyolefin modified with an unsaturated carboxylic acid or anhydride thereof such that the unsaturated acid or anhydride content is from 0.01 to 10 wt.% of the total polyolefin content and wherein an unmodified polyolefin comprises from 99.9 to 0 wt.% of the total polyolefin content with 40 – 3 wt.% of a rubbery component having a Mooney viscosity (50 $ML_1 + _4$ (100° C)) of 40 – 140.

6. A laminated resin product, which comprises: (1) a gas-barrier polymer layer of a polyester, a polyamide or a hydrolyzed copolymer of ethylene-vinylacetate and (2) a modified polyolefin composition layer laminated thereon, wherein said modified polyolefin composition is a mixture of 60 – 97 wt.% of a polyolefin which polyolefin comprises 0.1 to 100 wt.% of a polyolefin modified with an unsaturated carboxylic acid or anhydride thereof such that the unsaturated acid or anhydride content is from 0.01 ot 10 wt.% of the total polyolefin content and wherein an unmodified polyolefin comprises from 99.9 to 0 wt.% of the total polyolefin content with 40 – 3 wt.% of a rubber component having a Mooney viscosity (50 $ML_1 + _4$ (100° C)) of 40 – 150.

8. A laminated resin product, which comprises: (1) a gas-barrier polymer layer of a polyester, a polyamide or a hydrolyzed copolymer of ethylene-vinyl acetate and (2) modified polyolefin composition layers which are laminated on both surfaces of said gas-barrier polymer layer and (3) polyolefin layers which are laminated on each of said modified polyolefin composition layers, wherein said modified polyolefin composition is a mixture of 60 – 97 wt.% of a polyolefin which polyolefin comprises from 0.01 to 100 wt.% of a polyolefin modified with an unsaturated carboxylic acid or anhydride thereof such that the unsaturated acid or anhydride content is from 0.01 to 10 wt.% of the total polyolefin content and wherein an unmodified polyolefin comprises from 99.9 to 0 wt.% of the total polyolefin content with 40 – 3 wt.% of a rubber component having a Mooney viscosity (50 $ML_1 + _4$ (100°0 C) of 40 – 150.

4,058,648

DENSE PAPER

William G. Louden, Erwinna, Bucks County, Pa. 18920

Division of Ser. No. 564,780, April 3, 1975, Pat. No. 3,989,416, which is a continuation-in-part of Ser. No. 397,220, Sept. 14, 1973, abandoned. This application Aug. 3, 1976, Ser. No. 711,136

Int. Cl.[2] B05D *3/02*; B32B *23/08, 27/10*

U.S. Cl. 428—511 13 Claims

1. A dense paper, comprising: a web of cellulosic fibers having an impregnant dispersed throughout the web, said web having a pre-impregnation density in a range of 7–11 lbs./mil and containing after impregnation from about 8.5 to about 50%, by weight, of the impregnant, based on the dry weight of the impregnated web, and said impregnant consisting essentially of from about 35 to about 90% of a rigid polymeric material and from about 10 to about 65% of an inorganic filler, said polymeric material having a glass transition temperature in a range of between about 15° to about 60° C, and said percentages of polymeric material and filler being by weight based on the weight of said impregnant.

4,058,649

COATING COMPOSITIONS AND THERMOPLASTIC FILM SUBSTRATES COATED THEREWITH

Robert Henry Steiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 189,743, Oct. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 16,211, March 3, 1970, abandoned. This application Sept. 23, 1974, Ser. No. 506,075

Int. Cl.[2] C08J *7/04*

U.S. Cl. 428—518 4 Claims

1. A biaxially oriented polypropylene film substrate having a surface coating of a heat sealable composition consisting essentially of an interpolymer of (a) from about 5% to about 15% by weight of a monoethylenically unsaturated acid selected from the group consisting of methacrylic acid and mixtures of methacrylic acid and acrylic acid, (b) from about 50% to about 85% by weight of vinylidene chloride, and (c) from about 5% to about 45% by weight of an alkyl acrylate selected from the group consisting of methyl, ethyl, butyl, isobutyl and octyl acrylates.

4,058,650

BACK MATERIAL OF METAL BAND SAW HIGH IN FATIGUE STRENGTH

Kingo Kiyonaga; Ryousei Ago, and Sei Furuichi, all of Yonago, Japan, assignors to Hitachi Metals, Ltd., Japan

Filed July 9, 1976, Ser. No. 704,085

Claims priority, application Japan, July 11, 1975, 50-84458

Int. Cl.[2] C22C *38/06*

U.S. Cl. 428—683 20 Claims

1. A back material of a metal band saw high in fatigue strength which consists essentially of, by weight, 0.20 – 0.33% C, up to 1.5% Si, up to 1.5% of Mn, 3.5 – 6.5% Cr, 0.05 – 0.40% V, 0.05 – 0.10% Al, 0.02 – 0.30% Nb, at least one of 1.0 – 3.0% Mo and up to 4.0% W and the balance Fe and impurities, the sum of (% Mo) + ½ (% W) being within the range of 1.0 – 3.0%.

4,058,651

RECHARGEABLE AQUEOUS METAL-HALOGEN CELL

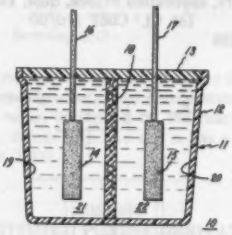
Fritz G. Will, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,003

Int. Cl.[2] H01M *10/36*

U.S. Cl. 429—105 6 Claims

1. A rechargeable aqueous metal-halogen cell comprising a casing, a pair of spaced apart porous electrode substrates in the casing, a fine-porous separator between the electrode substrates defining a positive and a negative electrode compartment, an electrolytic solution containing a zinc salt selected from the class consisting of zinc bromide, zinc iodide and mixtures thereof in both compartments, and an organic halogen complexing additive in the electrolytic solution of at least the positive compartment, the additive present in an amount from 10 to 50 weight percent of the electrolytic solution, the organic halogen complex additive selected from the class consisting of ethylene glycol, diethylene glycol, triethylene



glycol, propylene glycol, polyethylene glycols having a molecular weight from about 200 to 6000, alkyl ethers and alkyl esters thereof, the alkyl having from one to four carbon atoms, and polypropylene glycol having a molecular weight from about 200 to 6000, alkyl ethers and alkyl esters thereof, the alkyl having from one to four carbon atoms.

4,058,652

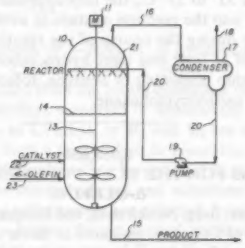
AUTOREFRIGERATION PROCESS AND APPARATUS

Stuart B. Smith; James J. McAlpin, both of Baytown, Tex.; Jose M. A. Peruyero, Morris Plains, N.J.; Ronald L. Hazelton, Mendham, N.J., and Edward F. Upchurch, Chatham, N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Feb. 10, 1976, Ser. No. 656,983

Int. Cl.[2] C08F *2/02, 2/06, 10/00*

U.S. Cl. 526—68 7 Claims



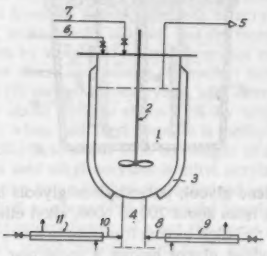
1. In an autorefrigeration reaction of alpha-olefins to produce polymers comprising reacting C_2 to C_8 alpha-olefins in the presence of a catalyst at temperatures in the range of 20° to 80° C in a solvent-diluent in liquid phase in a reaction zone, vaporizing a portion of said solvent-diluent from the liquid phase in said reaction zone, said vaporized solvent-diluent containing entrained polymer particles in the range of 3 to 15 microns, removing, condensing said solvent-diluent, and returning a portion of said solvent-diluent to said reaction zone, wherein the improvement comprises eturning condensed, solvent-diluent to said reaction zone as a spray, having a drop average particle size of less than 1000 microns, said vaporized solvent-diluent passing through said spray whereby over50 weight % of said entrained polymer particles of 5 microns and larger are removed from said vaporized solvent-diluent.

4,058,653

PROCESS FOR THE PREPARATION OF POLYMERS OF BUT-1-ENE

Bernard Boucheron, Bethune, and Emile Gosset, Lillebonne, both of France, assignors to Ethylene Plastique, Courbevoie, France

Filed Sept. 10, 1973, Ser. No. 395,941
Claims priority, application France, Sept. 14, 1972, 72.32647
Int. Cl.[2] C08F *110/00*
U.S. Cl. 526—159 5 Claims



1. In a process for the preparation of a polymer selected from the group consisting of but-1-ene homopolymers and copolymers of but-1-ene containing up to 15% by weight of units derived from at least one other α-olefin by the polymerization or copolymerization of but-1-ene in the presence of a sterospecific Ziegler-Natta catalyst and in a homogeneous reaction mixture, and at a temperature of from 35° to 55° C. the improvement which comprises introducing into the reaction mixture to avoid precipitation of the polymer during the course of the reaction from 1 to 30% by weight of at least one inert hydrocarbon solvent selected from the group consisting of benezene, toluene, xylene, cyclohexane and methylcyclohexane.

5. A process for the preparation of an isotactic polybut-1-ene by polymerizing but-1-ene in the presence of a catalyst comprising an organoaluminium compound and a titanium halogen compound in a homogeneous reaction mixture at a temperature of from 35° to 55° C., the improvement which comprises introducing into the reaction mixture to avoid precipitation of the polymer during the course of the reaction from 2 to 15% by weight of at least one inert hydrocarbon solvent selected from the group consisting of benzene, toluene, xylene, cyclohexane and methylcyclohexane.

4,058,654

PROCESS FOR THE BULK POLYMERIZATION OF α-OLEFINS

Hubert Sutter, Berg. Neukirchen, and Reinhard Peuker, Dormagen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 14, 1975, Ser. No. 595,926
Claims priority, application Germany, July 27, 1974, 2436259
Int. Cl.[2] C08F *2/02, 10/00, 10/06, 10/08*
U.S. Cl. 526—159 18 Claims

1. Process for continuous production of a polymer of an α-olefin monomer by bulk polymerization which comprises continuously introducing the monomer and a catalyst for the polymerization into the feed end portion of a multi-screw conveyor for transport of the monomer and catalyst in admixture through the conveyor and bulk polymerization of the monomer during said transport, the mixture of monomer and catalyst during said transport being under a pressure of 5–200 bars, the temperature of said monomer during said transport following a rising profile with the temperature adjacent the feed end of said multi-screw conveyor being −50° to 30° C and the temperature adjacent the discharge end thereof being 50° to 200° C.

4,058,655

MANUFACTURE OF LOW MOLECULAR WEIGHT POLY-N-VINYLPYRROLIDONE-2

Walter Denzinger, Speyer; Kurt Seelert, and Karl Herrle, both of Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 8, 1976, Ser. No. 665,065
Claims priority, application Germany, Mar. 29, 1975, 2514127
Int. Cl.[2] C08F *2/00, 4/00, 26/08*
U.S. Cl. 526—212 9 Claims

1. A process for the manufacture of homopolymers of N-vinylpyrrolidone-2 of low molecular weight having K values of less than 25 as measured by the method of H. Fikentscher, in 5 percent strength aqueous solution at 20° C, and said homopolymers having less than 0.1% residual monomer which comprises polymerizing said vinylpyrrolidone in an organic solvent at above 100° C. in the presence of an organic peroxide which carries an aliphatic or araliphatic radical, respectively of 1 to 8 or of 6 to 8 carbon atoms, on either side of the peroxide group, said vinylpyrrolidone as the monomer being gradually added during the polymerization within a period of 1 to 5 hours.

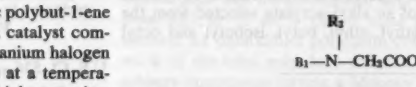
4,058,656

FREE RADICAL POLYMERIZATION PROCESS EMPLOYING SUBSTITUTED AMINO ACETIC ACID DERIVATIVES

Kenneth H. Markiewitz, and Alfred J. Restaino, both of Wilmington, Del., assignors to ICI United States Inc., Wilmington, Del.

Filed Apr. 5, 1976, Ser. No. 673,938
Int. Cl.[2] C08F *4/32, 20/06, 20/34, 20/56*
U.S. Cl. 526—215 15 Claims

1. A polymerizable system susceptible to free radical polymerization which comprises one or more ethylenically unsaturated compounds and a salt of an initiator consisting essentially of a compound of the formula:



wherein R_1 is a substituted or unsubstituted aryl radical, and R_2 is hydrogen or alkyl, which salt will yield a dissolved initiator compound of the said formula upon acidification, provided that the ethylenically unsaturated compounds to not contain any group with which the acid group of the initiator compound will preferentially react chemically.

4,058,657

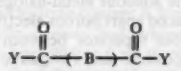
CO-CURED COMPOSITIONS OF AMINE-TERMINATED LIQUID POLYMERS AND VINYLIDENE-TERMINATED POLYMERS AND PROCESS FOR PREPARATION THEREOF

Robert William Ireland, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 593,673, July 7, 1975, abandoned. This application July 29, 1975, Ser. No. 599,990
Int. Cl.[2] C08F *26/08, 126/06, 26/00;* C08L *63/00*
U.S. Cl. 526—263 12 Claims

1. A composition comprising

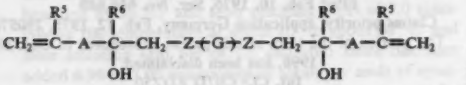
1. 100 parts by weight of at least one amineterminated liquid polymer containing an average from about 1.7 to about 3 amine groups per molecule, said groups being primary, secondary or a mixture thereof, and said polymer having the formula



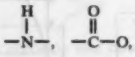
wherein Y is a univalent radical obtained by removing

hydrogen from an amine group of a heterocyclic amine containing from 2 to 20 carbon atoms and at least two amine groups, at least two of said amine groups being primary, secondary, or a mixture thereof, and B is a polymeric backbone comprising carbon-carbonlinkages, and

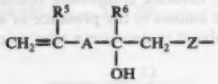
2. from about 80 to about 120 parts by weight of at least one vinylidene-terminated liquid polymer having the formula



wherein Z is selected from the group consisting of —S—,

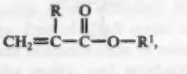


and —O—, A is a bivalent radical containing 1 to 10 atoms of at least one atom selected from the group consisting of C, O, S and N, R^5 and R^6 are hydrogen or alkyl radicals containing 1 to 4 carbon atoms, and G is a polymeric backbone comprising carbon-carbon linkages, said vinylidene-terminated polymer containing an average from about 1.7 to about 3



groups per molecule,

wherein said backbone comprising carbon-carbon linkages contains polymerized units of at least one vinylidene monomer having at least one terminal $CH_2{=}C<$ group said monomer being selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, and (3) acrylic acids and acrylates having the formula



said R being hydrogen or an alkyl radical containing 1 to 3 carbon atoms and said R^1 being hydrogen, an alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms.

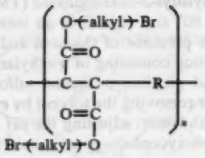
4,058,658

COPOLYMERS OF ω-BROMOALKYL ESTERS OF ACYCLIC UNSATURATED DICARBOXYLIC ACIDS

Albert W. Morgan, Collinsville, Ill.; Charles S. Shull, and William Vanderlinde, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1975, Ser. No. 642,929
Int. Cl.² C08F *4/32, 26/06, 126/10, 210/00*
U.S. Cl. 526—261 **8 Claims**

1. Copolymer of the formula



wherein R is the monomeric unit derived from the polymerization of an ethylenically unsaturated comonomer the reactivity value of which, when multiplied by the reactivity value of diethyl fumarate, is less than one and n has a value of from about 10 to about 2,000.

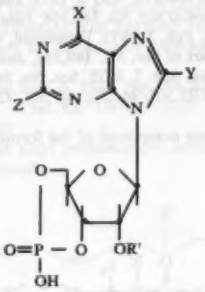
4,058,659

6,8-DISUBSTITUTED PURINE DERIVATIVES OF 9-β-D-RIBOFURANOSYL 3′,5′-CYCLIC PHOSPHATE

Roland K. Robins, Santa Ana, Calif.; Dennis A. Shuman, El Paso, Tex., and Kay H. Boswell, Mission Viejo, Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 474,923, May 31, 1974, abandoned. This application Sept. 29, 1975, Ser. No. 617,856
Int. Cl.² C07H *19/18, 19/20*
U.S. Cl. 536—27 **17 Claims**

1. A compound of the structure:



wherein Z is hydrogen or $—NH_2$; R′ is hydrogen or C_1–C_{18} acyl; X is NR_1R_2, Cl, Br, or SR_3; Y is SR_4; R_1 and R_2 are independently selected from the group consisting of hydrogen, phenyl, C_7 to C_{10} aralkyl, saturated or unsaturated straight or branched chain C_1 to C_7 alkyl, or R_1 and R_2 are lower alkyl joined together to form a pyrrolidino or piperidino ring; R_3 is hydrogen, lower alkyl, phenyl, or benzyl; and R_4 is phenyl, C_7 to C_{10} aralky, or substituted phenyl and substituted C_7 to C_{10} aralkyl wherein the substituents are selected from the group consisting of chloro, bromo, fluoro, methyl, methoxy, or nitro, with the proviso that when one of R_1 or R_2 is hydrogen the other is not.

4,058,660

PROCESS FOR THE CONVERSION OF 6-AMINOPENICILLANIC ACID (6-APA) IN 7-AMINODESACETOXYCEPHALOSPORANIC ACID (7-ADCA)

Antonio Luis Palomo Coll, Maestro Perez Cabrero 7, Barcelona, Spain

Filed Oct. 30, 1975, Ser. No. 627,468
Claims priority, application Spain, Nov. 2, 1974, 431585
Int. Cl.² C07D *501/10*
U.S. Cl. 544—18 **2 Claims**

1. In the process for the conversion of 6-aminopenicillanic acid (6-APA) to 7-aminodesacetoxycephalosporanic acid (7-ACDA), the improvement comprises reacting one mole of a compound selected from the group consisting of 2-chloro- and

2-bromobenzyl penicillin-(s)-sulphoxide with from two to four moles of 3-trimethylsilyl-2-oxazolidinone (TMSO) at a temperature of between 60° and 120° C in an inert non-hydroxylic solvent and in the presence of thiourea and a compound selected from the group consisting of triethylamine dimethylaniline, quinoline and picoline p-toluene sulfonate to obtain a solution, thereafter removing the solvent by evaporation, diluting the residue with water, adjusting the pH to 4.2, and isolating 7-aminodesacetoxycephalosporanic acid (7-ADCA).

4,058,661

7-DIACYL CEPHALOSPORINS

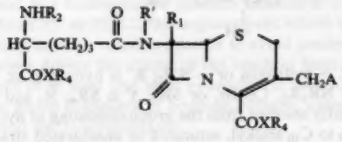
Lovji D. Cama, Edison; Burton G. Christensen, Metuchen; Sandor Karady, Mountainside, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 356,873, May 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 149,364, June 2, 1971, and Ser. No. 223,005, Feb. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 149,364, June 2, 1971. This application Apr. 7, 1975, Ser. No. 565,495

Int. Cl.[2] C07D *501/46, 501/44, 501/42, 501/40*

U.S. Cl. 544—21 **5 Claims**

1. A cephalosporin compound of the formula:



wherein R_2 is hydrogen, trichloroethoxycarbonyl, t-butoxycarbonyl, trimethylsilyl, p-methoxybenzyloxy, 2-nitrophenylsulfenyl, 2,4-dinitrophenylsulfenyl, chloroacetyl, or o-nitrophenylthio;

X is oxygen or sulfur;

R_4 is hydrogen, methyl, ethyl, t-butyl, phthalimidomethyl, succinimidomethyl, phenacyl, p-bromophenacyl, 2,2,2-trichloroethyl, 2-methylthioethyl, 2-(p-methylphenyl)ethyl, methoxymethyl, 2-(p-methylphenyl)sulfonylethyl, 2-methylaminoethyl, benzyloxymethyl, p-methoxybenzyl, 3,5-dinitrobenzyl, 2-chloroethyl, 2-bromoethyl, benzyl, p-nitrobenzyl, 2,4,6-trimethylbenzyl, 3,5-dichloro-4-hydroxybenzyl, benzhydryl, p-methoxybenzhydryl, acetoxymethyl, pivaloyloxymethyl, methoxymethyl, phenyl, p-nitrophenyl, or 3,5-dinitrophenyl;

R_1 is hydrogen or methoxy;

R′ is phenylacetyl, thienylacetyl, furylacetyl, phenoxyacetyl, phenylthioacetyl, α-azidophenylacetyl or trifluoroacetyl; and

A is carbamoyloxy;

4,058,662

PROCESS FOR THE SUBSTITUTION OF CHLORINE ATOMS OF CYANURIC CHLORIDE

Heinz Haschke, Weissenstein ob der Drau, Austria; Gerd Schreyer, Hanau, Germany; Werner Schwarze, Frankfurt, Germany, and Helmut Suchsland, Rodenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Germany

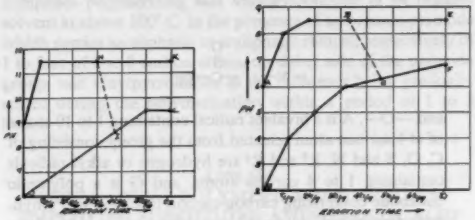
Filed Feb. 10, 1976, Ser. No. 656,849

Claims priority, application Germany, Feb. 12, 1975, 2505704

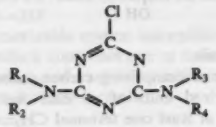
The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.

Int. Cl.[2] C07D *251/50*

U.S. Cl. 544—208 **21 Claims**



1. A process for the successive substitution of two chlorine atoms of cyanuric chloride comprising reacting the cyanuric chloride with two amines in the presence of an acid acceptor and an organic solvent to produce a triazine of the formula

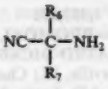


(I)

where R_1 and R_2 are lower alkyl, lower alkenyl, cyclo lower alkyl or methylcyclopropyl or such groups substituted by —OH, —OR_8, —SR_8 or CN where R_8 is lower alkyl, with the proviso that one of R_1 and R_2 can be hydrogen, and R_3 is as defined for R_1 or

and R_4 is

wherein R_6 and R_7 are alkyl or alkenyl of 1 to 8 carbon atoms, or together with the adjoining carbon atom form a 5 to 7 membered cycloalkyl ring or are cycloalkyl with the proviso that one of R_6 and R_7 can be hydrogen, said process comprising adding 1.00 to 1.05 mole of a first amine of the formula



to a 4.5 to 50 weight % suspension or solution of cyanuric chloride in a mixture of 65 to 85 weight % of a hydrocarbon selected from the group consisting of benzene, toluene, xylene, ethylbenzene, aliphatic hydrocarbons having 5 to 10 carbon atoms, cycloaliphatic hydrocarbons having

5 to 10 carbon atoms and mixtures of such hydrocarbons and 35 to 15 weight % of a ketone having 3 to 8 carbon atoms, maintaining the temperature between about 0° and about 20° C., continuously regulating the pH value of the reaction mixture obtained in accordance with the reaction time by adding alkali that the relationship of pH to reaction time is in the area bonded by ABCD of FIG. 1 of the drawings beginning with the (reaction)time t(step 1) = 0 and containing until a position is reached in the area bounded by BCEF and after reaching a pH of 7.0 maintaining the temperature at about 10° to about 60° C. and after attaining said pH of 7.0 and after there has been added 0.96 ro 1.05 equivalents of alkali per mole of cyanuric chloride adding an at least equimolar amount of a different amine of the formula

per mole of cyanuric chloride and continuously adjusting the pH value of the reaction mixture according to the reaction time by addition of alkali that the relationship of pH to reaction time is in the area bounded by GHIJ of FIG. 3 beginning with the (reaction)time t(step 2) = 0 until a position is reached in the area bounded by HIKL while maintaining a temperature of 40° to 70° C. and thereafter recovering the triazine product formed, and wherein t_1 is 4 to 10 hours and t_2 is 2 to 8 hours and further wherein the line BC corresponds to the equation $pH = -(12.6/t_1) + 14.35$ and the line HI corresponds the the equation $pH = -(24.857/t_2) + 23.9285$.

4,058,663

STABILIZATION WITH ALKALI METAL COMPOUND MATERIAL OF CERTAIN THERMALLY UNSTABLE DMT

Donald Kirkbright Black, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 2, 1976, Ser. No. 663,165
Int. Cl.² C07C 69/82
U.S. Cl. 560—3 8 Claims

1. A thermally stable composition consisting essentially of (1) thermally unstable fresh dimethyl terephthalate of extremely high purity, free of alkali metal compound material, having no significant concentration of either phosphonic acid moiety or phosphite moity, and produced by the cooxidationesterification process, and (2) dispersed therein at a stabilizing concentration, alkali metal monomethyl terehthalate.

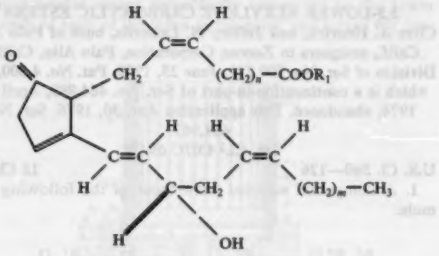
4,058,664

PROSTAGLANDIN C_3

Robert L. Jones, Edinburgh, Scotland, assignor to The University Court of the University of Edinburgh, Edinburgh, Scotland

Continuation of Ser. No. 483,326, June 26, 1974, abandoned, which is a division of Ser. No. 345,347, March 27, 1973, abandoned. This application Jan. 14, 1976, Ser. No. 648,856
Claims priority, application United Kingdom, Mar. 28, 1972, 14520/72; May 17, 1972, 23135/72
Int. Cl.² C07C 177/00
U.S. Cl. 560—121 5 Claims

1. An optically active compound of the formula:



wherein m is 0, 1, 2, or 3 and n is 2, 3, 4 or 5, and wherein R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with 1, 2, or 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

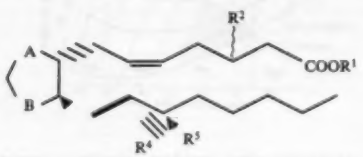
4,058,665

NOVEL 3,15-DILOWER ALKYL PGE_2 DERIVATIVES

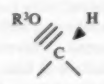
Noriyoshi Inukai; Masuo Murakami, both of Tokyo; Hidenori Iwamoto, Ageo; Isao Yanagisawa; Toshinari Tamura, both of Tokyo; Yoshio Ishii, Omiya; Tetsuya Shizaoki, Misato; Kenichi Tomioka, Kitamoto, and Tokuichi Takagi, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1975, Ser. No. 629,568
Int. Cl.² C07C 177/00
U.S. Cl. 560—121 8 Claims

1. 3,15-dilower alkyl prostadienoic acid derivatives represented by the formula



wherein B represents



and A represents

and R^3 represents a hydrogen atom or a protective group selected from the group consisting of a tetrahydropyran-2-yl group, a trilower alkyl silyl group, a triphenylsilyl group, an acetyl group, a propionyl group, and a p-phenylbenzoyl group, R^1 represents a hydrogen atom or a lower alkyl group, R^2 represents a lower alkyl group, and one of R^4 and R^5 represents a free hydroxyl group or a hydroxyl group protected by a protective group as defined with reference to R^3 and the other represents a lower alkyl group.

4,058,666

3,5-LOWER ALKYLENE CARBOXYLIC ESTERS

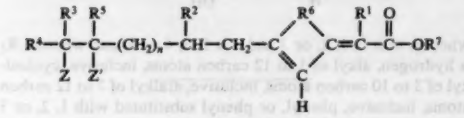
Clive A. Henrick, and Jeffery N. Labovitz, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 590,231, June 25, 1975, Pat. No. 4,000,174, which is a continuation-in-part of Ser. No. 464,880, April 29, 1974, abandoned. This application Apr. 30, 1976, Ser. No. 681,967

Int. Cl.[2] C07C *69/74*

U.S. Cl. 560—126 13 Claims

1. A compound selected from those of the following formula:



wherein,

R^1 is hydrogen or lower alkyl;

R^2 is lower alkyl;

R^3 is hydrogen or lower alkyl;

R^4 is lower alkyl;

R^5 is hydrogen or lower alkyl;

Z is hydrogen, chlorine, lower alkyl or one of the groups —OR or —SR in which R is hydrogen or lower alkyl;

Z' is hydrogen or together with Z forms a carbon-carbon bond;

n is one, two or three;

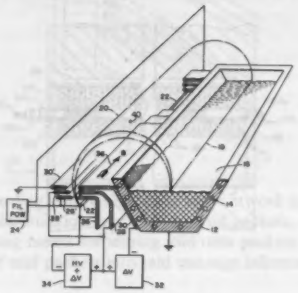
R^6 is methylene, ethylene or trimethylene; and

R^7 is lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl or cycloalkalkyl, said compound having cis/trans isomerism at

4,058,667
ION PROTECTED LINEAR ELECTRON BEAM METAL EVAPORATOR

Harold K. Forsen, Bellevue, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Nov. 10, 1975, Ser. No. 630,706
Int. Cl.[2] H01J *37/305*
U.S. Cl. 13—31 14 Claims



1. An ion protected linear electron beam evaporation system comprising:

a generally trough shaped, elongated crucible containing a supply of a material to be evaporated;

an elongate source of electrons extending in a direction parallel to the long dimension of said crucible;

means for applying an electron accelerating potential over a portion of an arcuate trajectory for the electron beam from said source to said crucible;

means for focusing electrons from said source of electrons on said trajectory onto the surface of the material to be evaporated in said crucible generally in a line along the long dimension of said crucible;

the focused electron beam from said source evaporating the material within said crucible to provide a vapor of said material including a plurality of ions;

means for providing a decelerating electrostatic field over a portion of the trajectory of said focused electron beam beyond said accelerating potential before said crucible and in a potential sufficient to generally impede the motion of the ions in the vapor from penetrating the region of said accelerating potential and striking said source.

4,058,668
COLD CRUCIBLE

Philip G. Clites, Silverton, Oreg., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 1, 1976, Ser. No. 662,665
Int. Cl.[2] F27D *1/12*
U.S. Cl. 13—32 5 Claims

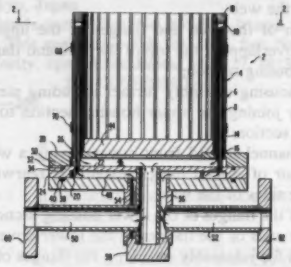
1. A cold crucible having

a normally vertical side wall formed of a plurality of vertical concentric tube pairs disposed side-by-side, each tube pair being comprised of

an outer tube having a closed upper end and an open lower end and

an inner tube spaced inwardly from the outer tube and having open upper and lower ends,

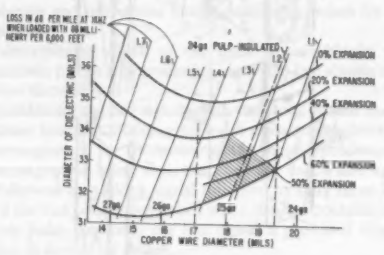
plural header means respectively connected to the lower ends of each of the tubes in the pairs, and means for connecting water supply and return conduits to the respective header means.



4,058,669
TRANSMISSION PATH BETWEEN NEARBY TELEPHONE CENTRAL OFFICES

Wendell Glenn Nutt, and George Harry Webster, both of Dunwoody, Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1975, Ser. No. 637,066
Int. Cl.[2] H01B *11/04*
U.S. Cl. 174—34 10 Claims



1. A telecommunication multipair cable comprising:

one or more units each comprising a plurality of insulated conductors arranged in twisted pairs, each conductor consisting of a copper wire having an insulative dielectric layer comprising a first polyolefin coat expanded with an inert gas, and thereover, a second coat of high density polyethylene, with said first coat constituting the major fraction of the thickness of said dielectric layer, CHARACTERIZED IN THAT:

a. each said copper wire has a diameter of from essentially 17 mils to 19½ mils;

b. the outside diameter of said dielectric layer is in a range of from approximately 31.7 mils to 35.5 mils;

c. and wherein said first coat is expanded by an amount ranging from 20 percent to 60 percent.

4,058,670
BURIED CABLE ENCLOSURE

Matthew L. Leschinger, Wauwatosa, Wis., assignor to Utility Products Co., Milwaukee, Wis.

Filed May 10, 1976, Ser. No. 684,750
Int. Cl.[2] H02G *9/02, 3/08, 15/10;* H05K *5/00*
U.S. Cl. 174—38 10 Claims

1. An enclosure for electrical apparatus associated with a buried cable installation, comprising:

a rear housing assembly including channel-shaped upper and lower housing sections,

both housing sections including a web and a pair of spaced forwardly projecting flanges extending from opposite sides of the web;

the bottom of the web and flanges of the upper housing section overlapping the top of the web and flanges of the lower housing section;

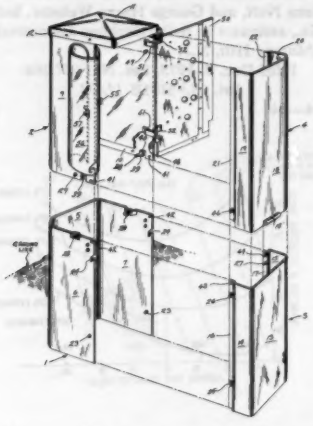
said rear housing assembly further including means for removably joining the upper housing section to the lower housing section;

a lower channel-shaped front cover having a web portion and a pair of spaced flanges extending rearwardly from opposite sides of the web;

the ends of the flanges of the lower housing section overlapping the ends of the flanges of the lower cover,

first means for releasably attaching the flanges of the lower cover to the corresponding flanges of the lower housing section;

a cap fastened to the top of said upper housing section and projecting forwardly therefrom to overlie the top of an upper cover;



a single upper channel-shaped cover completing the enclosure and having a web and a pair of spaced rearwardly projecting flanges extending from opposite sides of the web;

second means for releasably attaching the upper cover to the upper housing section; and

means for connecting the assembled upper and lower housing sections and lower cover into a subassembly to which the upper cover can be attached, said means for connecting comprising a removable fastener extending through the overlapping flanges of the upper and lower housing sections and the lower cover.

7. In an enclosure for electrical apparatus associated with a buried cable installation including a lower hollow housing, an upper rear housing section and an upper front cover adapted to be mounted to each other and to the top of said lower houusing, and a flexible plastic shield extending along the inner perimeter of said upper rear housing section and having ends extending outwardly therefrom, the improvement wherein:

each end of said shield has an integral T-shaped tab formed adjacent the outer edge and an opening formed at a point spaced inwardly of said edge.

4,058,671

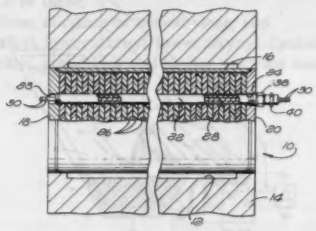
ELECTRICAL PENETRATION ASSEMBLY

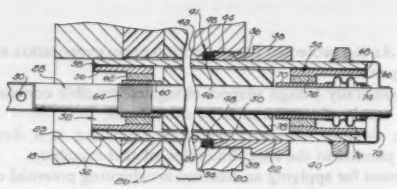
George J. Panek, Phoenix; Francis H. Ingham, Scottsdale; Albert R. Sedig, Buckeye, and Gerald R. Nieman, Phoenix, all of Ariz., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 7, 1975, Ser. No. 565,479

Int. Cl.[2] G21C *13/04*; H01B *17/30*

U.S. Cl. 174—151 **7 Claims**





1. An electrical penetration assembly for installation in a containment wall comprising:

a canister adapted to be mounted in an opening extending through the containment wall;

at least one hollow elongated feedthrough pipe extending lengthwise through said canister;

means removably mounting said pipe in said canister;

an elongated conductor extending longitudinally through said pipe;

a first glass-sealed header fixed to one end of said pipe and to one end of said conductor;

a second glass-sealed header fixed to the other end of said pipe and slidably receiving therein the other end of said conductor; and

a flexible bellows surrounding said other end of said conductor and being connected at one end to said conductor and at its other end to said second glass-sealed header whereby said bellows will accommodate any longitudinal expansion of said conductor due to elevated temperatures.

4,058,672

PACKET-SWITCHED DATA COMMUNICATIONS SYSTEM

William C. Crager, West Islip; Sudhindra R. Umarji, New York, both of N.Y.; Robert H. Griffin, Montclair, N.J., and Gerard J. Louit, New Haven, Conn., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 10, 1976, Ser. No. 740,681

Int. Cl.[2] H04L *11/20*; H04N *1/32*

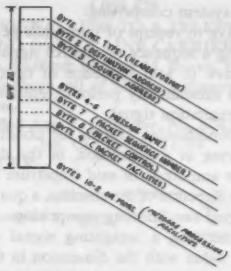
U.S. Cl. 178—3 **31 Claims**

1. A packet-switched data communications system comprising:

means for receiving message information from one or more message sources;

means for subdividing said message information from each of said message sources into a plurality of data packets, each of said packets including at least a portion of said message information;

means for independently transmitting said data packets over said communications system including a network of a plurality of switching nodes for selectively storing and



forwarding said packets over said network in accordance with information contained by said packets; and

processing means for storing said data packets for reassembly of said packets into said message information.

4,058,673

ARRANGEMENT FOR CIPHERING AND DECIPHERING OF INFORMATION

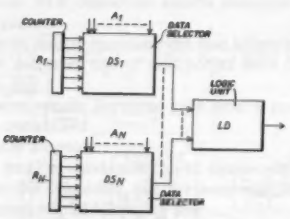
Sven Torild Kruse Johansson, Hagersten, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Sept. 24, 1975, Ser. No. 616,490

Claims priority, application Sweden, Oct. 17, 1974, 74130873

Int. Cl.² H04L *9/04*

U.S. Cl. 178—22 **2 Claims**



1. Key generator apparatus for producing an internal key for enciphering and deciphering a message, comprising *n* memories each having N memory fields, a number of cycle length counters each counter being associated with all of the memory fields having the same order number in the different memories, each of said counters generating memory addresses for reading out information from the associated memory fields, a plurality of switching means having their inputs connected to said associated memory fields and having outputs and control means operated in response to a received information word for controlling said switching means to forward read out information from only one of said associated memory fields to its output in accordance with said information word, the data at said outputs of said switching means forming a key word which can be used for enciphering.

4,058,674

GRAPHIC INFORMATION COMPRESSION METHOD AND SYSTEM

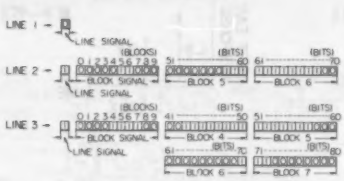
Yasuyuki Komura, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 451,161, March 14, 1974, abandoned. This application Feb. 20, 1976, Ser. No. 659,866

Claims priority, application Japan, Mar. 27, 1973, 48-35413

Int. Cl.² H04N *1/40*

U.S. Cl. 358—260 **11 Claims**



1. A method of compressing graphic information for transmission which is encoded in the form of an electrical pulse train in which an original graphic document is scanned in a regular orthogonal pattern having a predetermined number of blocks of equal length and a predetermined number of lines of equal length to produce the electrical pulse train, the number of blocks per line thus being equal to the predetermined number of blocks divided by the predetermined number of lines, comprising the steps of:

a. determining which of the blocks contain pulses and producing electrical block signals indicative thereof;

b. combining in a predetermined arrangement the block signals and only those blocks containing pulses for transmission;

c. determining which of the lines include blocks which contain pulses and producing electrical line signals indicative thereof; and

d. combining the line signals with the block signals and only those blocks containing pulses in a second predetermined arrangement for transmission, the second predetermined arrangement being such that for each line, a line signal is followed by a block signal followed by only those blocks of the line containing pulses when the line contains at least one pulse, and only the line signal is provided when the line is devoid of pulses.

4,058,675

LOUDSPEAKER SYSTEM FOR USE IN A STEREOPHONIC SOUND REPRODUCTION SYSTEM

Fumio Kobayashi, Hino, and Shozo Koshigoe, Sayama, both of Japan, assignors to Sansui Electric Co., Ltd., Japan

Filed June 15, 1976, Ser. No. 696,218

Claims priority, application Japan, June 19, 1975, 50-83940[U]

Int. Cl.² H04R *5/00, 5/02, 5/04*

U.S. Cl. 179—1 G **10 Claims**

1. A loudspeaker system for use in a stereophonic sound reproduction system for providing a stereophonic sound field using at least one pair of loudspeaker systems placed at equal distances from a listener in a listening room and receiving stereophonically related audio signals, each loudspeaker system comprising:

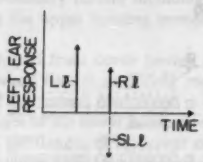
a main speaker responsive to application of a corresponding one of the stereophonic audio signals thereto to radiate an acoustic energy toward the listener; and

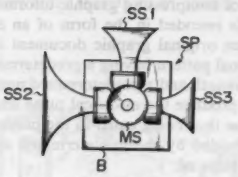
a sub-speaker responsive to application of said corresponding one of the stereophonic audio signals thereto to radiate an acoustic energy which is out of phase with, and smaller in magnitude than the acoustic energy from said main speaker and reaches the listner's corresponding one ear later than the acoustic energy from said main speaker.

7. A loudspeaker system for use in a stereophonic sound

reproduction system for providing a stereophonic sound field using at least one pair of loudspeaker systems placed substantially at equal distances from a listener in a listening room and receiving stereophonically related audio signals, each loudspeaker system comprising:

a main speaker responsive to application of the corresponding one of the stereophonic audio signals thereto for radiating an acoustic energy corresponding to the audio signal; and





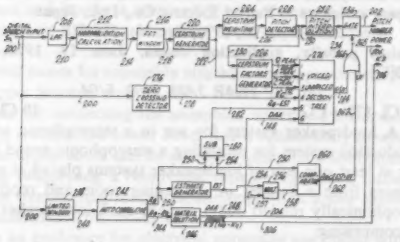
first, second and third sub-speakers responsive to application thereto of said corresponding one of the stereophonic audio signals which is smaller in amplitude than, and in an out-of-phase relation to the audio signal applied to said main speaker for radiating acoustic energies respectively in upper, left and right directions with respect to said main speaker.

4,058,676

SPEECH ANALYSIS AND SYNTHESIS SYSTEM

Arthur L. Wilkes, Woodland Hills; Fred B. Wade, Ventura, and Robert L. Thompson, Thousand Oaks, all of Calif., assignors to International Communication Sciences, Woodland Hills, Calif.

Filed July 7, 1975, Ser. No. 593,861
Int. Cl.² G10L *1/00*
U.S. Cl. 179—1 SA **92 Claims**



27. A method for analyzing a plurality of speech signals in real time and generating representative control parameters therefor, said method comprising the steps of:

analyzing each of a plurality of speech signals by a Cepstrum technique to generate a pitch period parameter;

analyzing each of said plurality of speech signals to generate a voiced/unvoiced decision parameter; and

analyzing each of said plurality of speech signals by linear prediction technique to generate a predetermined number of coefficient parameters and a power parameter.

67. A pitch pulse generating system for use in a speech synthesizer which receives a pitch period parameter, said pitch pulse generating system comprising:

means responsive to receipt of said pitch period parameter for generating a sequence of control signals; and

means responsive to said sequence of control signals for generating a substantially periodic, amplitude increasing pitch pulse excitation signal.

88. A signal conditioning system for conditioning a Cepstrum signal having as a dimension, in the direction of the ordinate axis, the amplitude of said Cepstrum signal and as a dimension, in the direction of the abscissa, a quantity representing time, said signal conditioning comprising:

means for generating a weighting signal which linearly increases in value with the dimension in the direction of the abscissa corresponding to said quantity representing time of said Cepstrum signal; and

means for adding said weighting signal to said Cepstrum signal along said dimension in the direction of the abscissa thereof to generate a weighted Cepstrum signal.

92. A signal conditioning system for a frame of digital speech data samples, said system comprising:

means for generating a window signal having a characteristic waveshape which is completed in a data sample span which is shorter than said frame of data;

means for centering said window signal data sample span in said frame of speech data samples; and

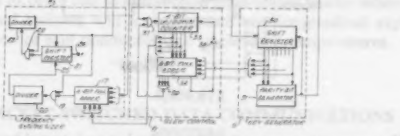
means for multiplying corresponding sample positions of said frame of speech data and said window signal to generate a limited and windowed frame of speech data.

4,058,677

SOUND SCRAMBLING EQUIPMENT

Peter Maitland, Fort Lauderdale, Fla., and William H. Draeger, Corona, Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 464,365, April 26, 1974, abandoned. This application July 30, 1975, Ser. No. 600,133
Int. Cl.² H04K *1/04*
U.S. Cl. 179—1.5 FS **14 Claims**



1. A method of scrambling intelligence within a known frequency spectrum comprising the steps of translating the frequency spectrum of the intelligence by mixing the signals within the known frequency spectrum with a local oscillator signal having a frequency that varies between a plurality of discrete frequencies within a selected band at a selected rate, passing only that portion of the translated frequency spectrum above a selected frequency through a first channel, translating the passed portion to a frequency spectrum at the lower end of the frequency spectrum of the unscrambled intelligence that is not being used by the intelligence translated by the local oscillator signal, passing through a second channel the entire frequency spectrum of the intelligence translated by the local oscillator signal, combining the output of each channel, and

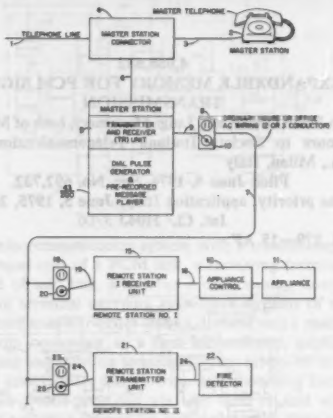
limiting the bandwidth of the combined signals to a selected bandwidth.

4,058,678

REMOTE SIGNALLING TO A TELEPHONE LINE UTILIZING POWER LINE CARRIER SIGNALS

Robert T. Dunn, Bedford; William M. Brown, Hudson, and John M. Ruddy, Sudbury, all of Mass., assignors to Astech, Inc., Bedford, Mass.

Filed Apr. 7, 1976, Ser. No. 674,557
Int. Cl.² H04M *11/04*
U.S. Cl. 179—2.5 R **8 Claims**



1. A power line telephone extension system for carrying coded signals from (1) a subscriber's telephone line of a conventional telephone communication system wherein a separate telephone line is provided from a central switching system at a central station to each subscriber at the subscriber's premises and each subscriber's telephone line includes at least two wires, the tip line and the ring line to (2) one or more remote locations at the subscriber's premises, over available electric power wires and power wire connector outlets comprising at the subscriber's premises:

a. a subscriber's master location near said subscriber's telephone line and near one of said power wire connector outlets,

b. one or more remote locations each near a power wire connector outlet; and

c. at the master location;

d. a master receiver having its input electrically coupled directly to the telephone line for receiving the coded signals carried on the telephone line,

e. a master transmitter for transmitting the coded signals that are received to the available power wires at the subscriber's premises, and

f. an electrically reactive coupling device for coupling the output of the master transmitter to said available power wires via a power wire connector outlet,

g. whereby, said power wires carry the coded signals including a coded signal addressed to a particular remote location,

h. a coded address signal detector at the particular remote location,

i. a utilization device at said remote location, and

j. means at the remote location responsive to the detector for detecting the particular coded address signals for controlling the utilization device,

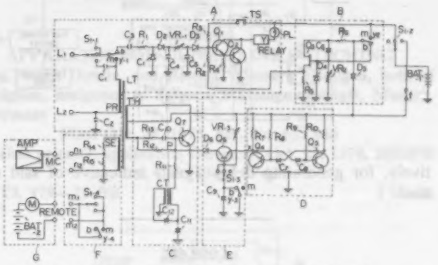
k. whereby the utilization device is controlled by the coded telephone line signals.

4,058,679

TELEPHONE ANSWERING DEVICE WITHOUT OUTGOING MESSAGE TAPE

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Koporeishon Kabushiki Kaisah, Japan

Continuation-in-part of Ser. No. 527,864, Nov. 27, 1974, Pat. No. 3,984,640. This application Apr. 29, 1976, Ser. No. 681,526
Claims priority, application Japan, Jan. 31, 1974, 49-13174
The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.
Int. Cl.² H04M *1/64*
U.S. Cl. 179—6 R **11 Claims**



1. A telephone answering device with means for controlling an incoming message recorder automatically in response to a calling signal, comprising ringing circuit means for energizing switching means in response to a calling signal; timer means energized through said ringing circuit means for starting the operation of said device and to deenergize the ringing circuit means after a predetermined period of time; a line transformer comprising a plurality of windings with a first winding connected through said switching means to telephone lines of the telephone answering device, a second winding for transmitting an oscillating signal to the telephone lines, and a third winding for introducing a caller's message to an external incoming message recorder; oscillator means with means for energizing said oscillator means through said switching means; said oscillator means being energized at the same time as said timer means to produce a predetermined answering signal; auxiliary switching means with means for setting auxiliary switching means to be off for a substantially short period of time at every preset time interval; and switching gate means connected between said oscillator means and said auxiliary switching means and having means for setting said auxiliary switching means a nonoperative state for substantially a predetermined time interval after energization of the timer means, said auxiliary switching means being switched therafter to an operative state to control thereby the oscillation of said oscillator circuit.

4,058,680

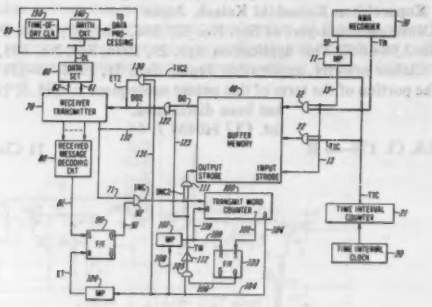
TELEPHONE MESSAGE TIMING SYSTEM

Robert Bartlett Curtis, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 6, 1976, Ser. No. 747,509
Int. Cl.² H04M *15/18*
U.S. Cl. 179—7.1 R **12 Claims**

1. In combination in a telephone call billing system, storage means for temporarily storing call data and timing means for determining the delay time of said call data in said storage means comprising means for generating a continuous series of periodic signals, means for counting said signals and for generating successive time interval data representative of particular signal counts, means responsive to the introduction of said call data in said storage means for combining said call data and first particular time interval data to form a first data word in said storage means, means responsive to the subsequent readout from said storage means of said first data word for generating a second data word including second particular time interval

data, and means for comparing said first and second particular time interval data of said first and second data words, respectively, for generating delay signals indicative of said delay time.

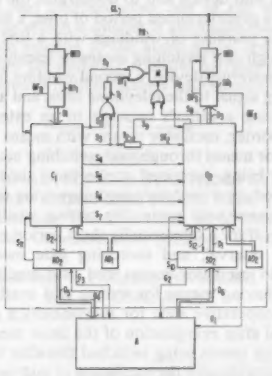


4,058,681

INFORMATION TRANSMISSION SYSTEM

Yoshihiro Imaizumi, and Yoshihiko Nishida, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed July 23, 1976, Ser. No. 708,442
Claims priority, application Japan, July 26, 1975, 50-91395
Int. Cl.[2] H04J *6/02*
U.S. Cl. 179—15 AL **4 Claims**



1. In an information transmission network of the type comprising a plurality of information processing stations, each having a communications control means and an information processor, linked together by their parallel connection to an information bus line, a method of establishing orderly command over the utilization of said bus line without a special line controlling station, said method comprising,

a. establishing at a given station *i* command over the use of the bus line,

b. transmitting to said bus line from said given station *i* a command established signal ELS indicating that command is established and that said given station *i* has command,

c. receiving at all other stations said command established signal ELS,

d. communicating data between said given station *i* and any other station via said bus line,

e. after said communication or where no communication is required by station *i*, relinquishing command and sending a transfer command signal SEL having a selected address *m* attached thereto to said bus line,

f. receiving at all stations said transfer command signal SEL, and at the station having address *m* establishng command over the bus line, and

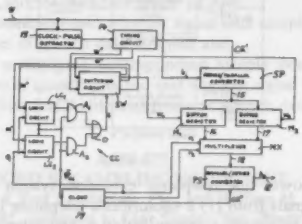
g. repeating steps (b) thru (e) with station *m* being the command station, whereby command is continuously transferred from one station to the nest to give all stations command of the bus line consecutively.

4,058,682

EXPANDABLE MEMORY FOR PCM SIGNAL TRANSMISSION

Roberto Delle Donne, and Luigi Musumeci, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed June 4, 1976, Ser. No. 692,732
Claims priority, application Italy, June 5, 1975, 24019/75
Int. Cl.[2] H04J *3/06*
U.S. Cl. 179—15 AF **7 Claims**



1. An expandable memory for converting an incoming bit stream of a first bit frequency, divided into a succession of n-bit words where *n* is an integer greater than 2, into an outgoing bit stream of a second bit frequency, comprising:

first timing means controlled by the incoming bit stream for generating on a first pair of outputs a pair of interleaved pulse trains of a cadence $\frac{1}{n}$ times said first bit frequency;

second timing means independent of said incoming bit stream for generating on a second pair of outputs a second pair of interleaved pulse trains of a cadence $\frac{1}{n}$ times said second bit frequency, the pulses of each train of said second pair being normally spaced from the pulses of corresponding trains of said first pair;

bit-storing means including a pair of n-stage buffer registers, with writing inputs respectively connected to said first pair of outputs and with reading inputs respectively connected to said second pair of outputs;

first circuit means for alternately writing the words of said incoming bit stream into said buffer registers under the control of said first pair of pulse trains;

second circuit means for alternately reading the words written in said buffer registers under the control of said second pair of pulse trains;

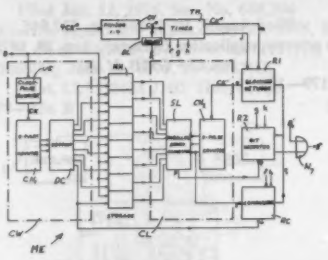
monitoring means connected to said first and second circuit means for detecting a near-coincidence of a pulse from one of said second pair of pulse trains with a pulse from the corresponding one of said first pair of pulse trains; and

switchover means controlled by said monitoring means for transposing the pulse trains on one of said pairs of outputs, thereby re-establishing a normal spacing between the pulses of corresponding trains of said first and second pairs of pulse trains.

4,058,683
EXPANDABLE MEMORY FOR ASYNCHRONOUS PCM MULTIPLEXER

Francesco Fenoglio, Milan, Italy, assignor to Societa Italiana Telecomunicazioni SIEMENS S.p.A., Milan, Italy

Filed May 7, 1976, Ser. No. 684,012
Claims priority, application Italy, May 9, 1975, 23141/75
Int. Cl.[2] H04J 3/06
U.S. Cl. 179—15 AF 10 Claims



1. In a telecommunication system with a transmitting terminal at an input end of a PCM link, a receiving terminal at an output end of said link, a number *z* of incoming lines at said transmitting terminal carrying respective streams of message bits organized in lower-order frames divided into a multiplicity of time slots occurring at a first bit cadence, multiplexing means at said transmitting terminal for the bit-by-bit interleaving of said lower-order frames from said incoming lines into a higher-order frame sent out via said link to said receiving terminal at *z* times a second bit cadence higher than said first bit cadence to provide additional time slots for the inclusion of ancillary bits constituting supervisory signals, a set of first expandable memories respectively inserted between said incoming lines and said multiplexing means for facilitating the introduction of said ancillary bits into said additional time slots, a number *z* of outgoing lines at said receiving terminal respectively paired with said incoming lines, demultiplexing means at said receiving terminal for redistributing the interleaved message bits of said higher-order frame to said outgoing lines, and a set of second expandable memories respectively inserted between said demultiplexing means and said outgoing lines for facilitating the suppression of ancillary bits introduced at said first expandable memories, the improvement wherein each expandable memory of said first set comprises:

register means with *n* stages for the temporary storage of *n* consecutive message bits of an incoming bit stream;

writing-control means for timing the recurrent sequential loading of said stages at a rate corresponding to said first bit cadence;

reading-control means for timing the recurrent sequential unloading of said stages, during intervals of predetermined length representing several subframes of a recurrent higher-order frame, at a rate corresponding to said second bit cadence but with an initial gap at the beginning of each subframe for the insertion of at least one ancillary bit;

comparison means connected to said writing-control means and to said reading-control means for determining the delay between the loading and the unloading of a given stage of said register means and for generating a preparatory signal upon said delay falling short of a predetermined period equaling less than *n* bit cycles of said first bit cadence;

timing means for generating distinctive control pulses in different subframes, said comparison means including circuitry controlled by said timing means for emitting a stuffing command in response to the generation of said preparatory signal in an early subframe of said higher-order frame;

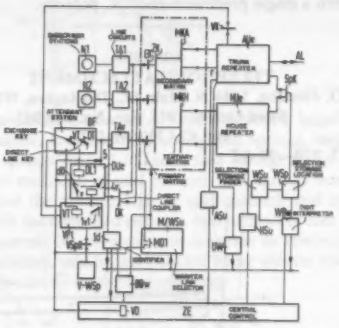
blocking means responsive to said stuffing command and to a control pulse from said timing means for inhibiting the unloading of a stage of said register means in a predetermined time slot of a later subframe of said higher-order frame, following said early subframe, normally allocated to a message bit; and

insertion means responsive to said stuffing command and to a control pulse from said timing means for inhibiting, in at least one initial gap of a subframe following said early subframe, a discriminating bit informing the corresponding memory of said second set of the absence of a message bit in said predetermined time slot.

4,058,684
APPARATUS FOR DIRECT LINE SWITCHING

Artur Nagel, Deurle, and Roland Wissaert, Drongen, both of Belgium, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 28, 1975, Ser. No. 625,868
Claims priority, application Germany, Oct. 25, 1974, 2450870
Int. Cl.[2] H04M 3/42
U.S. Cl. 179—18 BB 1 Claim



1. In a telecommunication system having subscriber stations, an operator station, a central control, identifier means, normal switching network means for completing connections within the system via internal repeater means and without the system via trunk repeater means and a direct line switching network for direct line connections of subscriber stations having the direct connection capability to direct line coupling means, said operator station having exchange key means for connecting said operator station to said trunk repeater and direct line key means for marking and identifying direct line subscriber stations and means responsive thereto for connecting the operator with the corresponding direct line subscriber station via said direct line coupling means, the improvement comprising:

identifying means operable responsive to actuation of said exchange key means and said direct line key means for marking and identifying in said direct line coupling means said direct line subscriber station to which an incoming call from said trunk repeater means is to be connected and

switching means operable responsive to the result of the operation of said identifying means for forming a normal connection path between said trunk repeater means and said direct line subscriber station to which the incoming call is to be connected.

4,058,685
INTEROFFICE LOOP SUPERVISION ARRANGEMENT

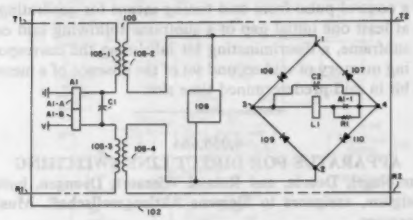
William Ferdinand Bowin, Galion, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Nov. 19, 1976, Ser. No. 743,113
Int. Cl.[2] H04M 7/00
U.S. Cl. 179—18 AH 6 Claims

1. In a loop signaling interoffice communication trunk cir-

cuit, transformer-coupled to the interoffice transmission facility via a repeat coil, the improvement comprising;

full-wave rectification means having first and second input nodes respectively coupled to one terminal of first and second facility-side windings of said repeat coil and having first and second output nodes across which is coupled the facility-side midpoint capacitor for said repeat coil, said full-wave rectification means operative as connected to force said facility-side midpoint capacitor to charge with a single predetermined DC polarity.



4,058,686

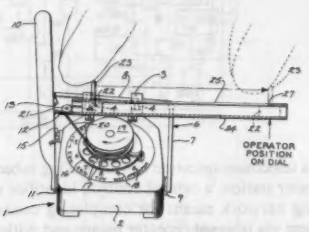
TELEPHONE ATTACHMENT

John O. Fleming, 1144 N. Main St., Darlington, Wis. 53530

Filed Oct. 6, 1975, Ser. No. 619,942

Int. Cl.[2] H04M *1/23*

U.S. Cl. 179—90 AT **3 Claims**



1. In combination with a telephone having a base, a rotatable dial on the base, a cradle associated with the base and from which the telephone receiver has been removed, and an actuating switch button disposed in the cradle, an attachment to be used by a handicapped person to operate the telephone, comprising an arm mounted on the telephone and movable between an operative position wherein the arm overlies the cradle and depresses the switch button and an inoperative position wherein the arm is out of engagement with the switch button, a handle pivoted to the base and projecting upwardly beyond the base to a position where it can be engaged by other than a person's hand, latch means carried by the handle for latching the arm in the operative position, pivotal movement of said handle acting to release said latch means and move said arm to the inoperative position and release said switch button, a drum mounted on the dial, a cable wound around the drum, an elongated tube connected to the base and having a longitudinal slot extending a substantial portion of the length thereof, a slide disposed within the tube for sliding movement therein, said slide being connected to the outer end of said cable, a projection mounted on the slide and extending outwardly through said slot, the outer extremity of said slot forming a stop to limit the sliding movement of said projection in said slot, and linearly spaced indicia on said tube for determining the rotary position of said dial relative to the position of said projection, said projection adapted to be engaged by other than a handicapped person's hand and moved longitudinally of said slot to thereby rotate said dial and enable the person to place a telephone call.

4,058,687

CASSETTE RECORDER WITH SWITCHING FOR A DEVICE FOR NOISE SUPPRESSION

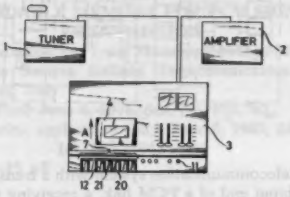
Werner Broghammer, Tennenbronn; Jürgen Krämer, Peterzell, and Helmut Laufer, St. Georgen, all of Germany, assignors to Dual Gebruder Steidinger, St. Georgen, Black Forest, Germany

Filed Aug. 9, 1976, Ser. No. 712,945

Claims priority, application Germany, Aug. 29, 1975, 2538479

Int. Cl.[2] G11B *31/00*

U.S. Cl. 179—100.11 **6 Claims**



1. A magnetic tape recorder having a means for actuating recording and a means for actuating playback of sounds as well as a noise suppression means, comprising

switch means for selectively placing the noise suppression means in operation for direct reproduction of radio broadcasts,

a sound carrier tape cassette having a magnetic tape therein and a rear wall formed with a selectively removable break-through tab in said wall, the presence of said break-through tab constituting an indicia of an absense of a recording being on the tape, and the absense of said break-through tab defining a break-through opening in said wall, constituting an indicia of a presence of a recording on the tape,

sensor means for sensing said break-through opening and said break-through tab, respectively, of said cassette, when the latter is positioned in an operating position in the tape recorder,

said sensor means including a first abutment surface on a front side thereof and a relatively rearwardly disposed second abutment surface, said sensor means and said first abutment surface thereof being formed with a recess defined in part by said second abutment surface, said second abutment surface being disposed behind and adjacent said first abutment surface with respect to a sensing movement direction of insertion of said cassette such that three different positions of said sensing means result, namely:

a first position wherein said first abutment surface of said sensor means engages against said break-through tab, the latter constituting an unopened wall portion of said cassette;

a second position wherein said tab is absent and another portion of said wall of said cassette adjacent said break-through

opening of said cassette is inserted in said recess and with said second abutment surface on said sensor means abutting against said another portion of said wall of said cassette adjacent said break-through opening;

a third position wherein said sensor means during an absence of said cassette is unabutted by any wall of said cassette;

locking means for operatively blocking a movement of the means for actuating recording into an operating condition of the latter, said locking means being operatively connected with said sensor means,

said sensor means for actuating said locking means to be operative for blocking said means for actuating recording

when said sensor means is in said second position, and for making said locking means inoperative to block said means for actuating recording when said sensor means is in said first or third positions, respectively.

4,058,688

HEADPHONE

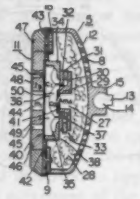
Yasutake Nishimura, Hirakata, and Mitsuhiro Hasegawa, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 12, 1976, Ser. No. 648,306

Claims priority, application Japan, May 29, 1975, 50-65055; May 30, 1975, 50-65484; May 27, 1975, 50-71751[U]; May 29, 1975, 50-73205[U]; June 25, 1975, 50-90147[U]

Int. Cl.² H04M *1/05;* H04R *1/28*

U.S. Cl. 179—156 R 5 Claims



1. Headphone apparatus comprising:

a head band;

a pair of headphones, one of said headphones being attached to one end of said head band and the other attached to the opposite end of said head band, each of said headphones including

a headphone case having a plurality of perforations provided through the rear surface thereof;

a baffle plate coupled to said headphone case;

a transducer unit attached to said baffle plate, said transducer unit comprising a vibrator element, a magnetic field producing element including a through hole extending through the center thereof and a first damper material provided between one end of said magnetic field producing element adjacent said through hole and said vibrator element;

a second damper material located within said headphone case; and

a cover positioned in the front of said transducer unit, said cover having an air-permeable ear pad including a plurality of through holes therein, the acoustic resistances and inertances of said headphone being so established that the sound pressure versus frequency characteristics of said headphones are such that there are two peaks between 1.5 and 5 KHz and the level differences between the low level area and the peaks are limited within the range of 6 to 17 dB.

4,058,689

VARIABLY ADJUSTABLE SHOULDER TELEPHONE HANDSET SUPPORT

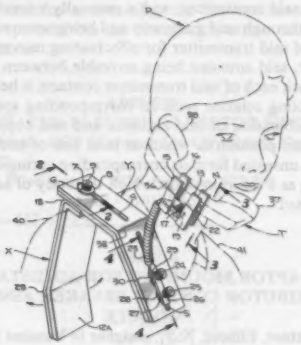
Albert Eugene Stebinger, Santa Monica, Calif., assignor to TSSCO, Santa Monica, Calif.

Filed Sept. 15, 1976, Ser. No. 723,543

Int. Cl.² H04M *1/05*

U.S. Cl. 179—157 1 Claim

1. A shoulder support for a telephone handset comprising: a configured frontal member and a configured back member, said frontal and back members being adapted to rest on the chest and shoulder blade of the user, said back member being adapted to make angular contact with the shoulder blade of the user, said frontal and back members being adjustably connected to rest on a shoulder of the user, means for the adjustable connection holding said members in a desired spacing, and means for the adjustable connection holding said back member in varying planes of contact with a shoulder blade of the user, said members being substantially covered on their undersides with a sponge rubber like material; a flexible arm thrusting upwards from the chest portion of said frontal member, said flexible arm being adjustably connected to the chest portion of said frontal member, the means for the adjustable connection holding said flexible arm in an upward or downward adjustment, said flexible arm being firmly and adaptably connected at its other end to a plastic coated, spring actuated handset



holder; comprising a channel of predetermined length and outside diameter, four matched configured springs, means to attach said springs to said channel, said springs being set in opposition at each end of said channel, said springs being set evenly against the outside edge of said channel, said springs being set with the distended side out, said handset holder being adapted to permit the instantaneous insertion or removal of a telephone handset, said handset holder being shorter than the hand held portion of a telephone handset.

4,058,690

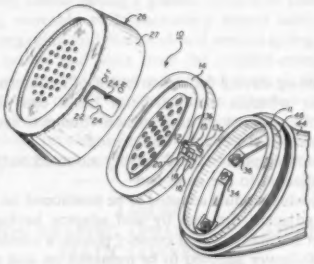
TRANSMITTER CUT-OFF DEVICE

Alvin A. Serkez, 26 Tea Place, Tappan, N.Y. 10983

Filed Aug. 11, 1976, Ser. No. 713,395

Int. Cl.² H04M *1/19*

U.S. Cl. 179—167 5 Claims



1. In a transmitter cut-off device for use in a conventional hand-held telephone transmitter-receiver unit, said unit including a main body; a transmitter housing having a lip, said housing being disposed in a recess in said body; a pair of spring contacts disposed in said housing; a transmitter cap having a downwardly extending side wall, said cap being removably secured to said main body; and a transmitter having an upper surface in confronting relation with said cap and a bottom surface opposite said upper surface, said transmitter being disposed in the cavity defined between said transmitter housing and said cap, the periphery of said lower surface being seated on said lip, said transmitter having a pair of transmitter

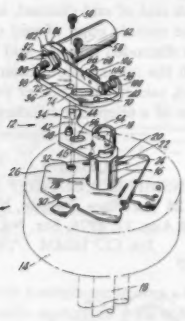
contacts disposed on the bottom surface thereof, each of said transmitter contacts being seated in electrical conducting relation with its corresponding spring contact, said transmitter cut-off device being of the type wherein transmitter cut-off is effectuated by unseating at least one of said transmitter contacts from its corresponding spring contact, the improvement comprising said cap having a vertically extending guideway disposed in said side wall, the interior of said side wall opposite said guideway having a support surface, said support surface being in close confronting relation with the upper surface of said transmitter, and a manually operable actuator extending through said guideway and being secured directly to the body of said transmitter for effectuating movement of said transmitter, said actuator being movable between a first position in which each of said transmitter contacts is held in electrical conducting relation with its corresponding spring contact by the combination of said actuator and said support surface, and a second position in which at least one of said transmitter contacts is unseated form its corresponding spring contact, said lip serving as a fulcrum upon which the body of said transmitter is pivoted.

4,058,691

ADAPTOR MOUNTING FOR ADJUSTABLE DISTRIBUTOR CONTACT BREAKER ASSEMBLY MODULE

Milton Wittner, Elmont, N.Y., assignor to Vonsimi Sales Corporation, Great Neck, N.Y.

Filed Aug. 4, 1976, Ser. No. 711,747
Int. Cl.[2] H01H *19/62*; F02P *7/00*; H01H *9/08*
U.S. Cl. 200—31 R **11 Claims**



1. A tune up device for a distributor of an internal combustion engine wherein the distributor has a cam for opening contact points to provide high tension voltage to each combustion chamber of the engine, comprising:

an adaptor adapted to be adjustably mounted on the distributor adjacent to the cam, and

a replaceable module adapted to be positioned on the distributor adjacent the cam by said adaptor having a pair of preset normally closed contact points, a condensor and a cam follower adapted to be mounted on said adaptor,

wherein once said adaptor is positioned on the distributor upon initial installation of said device said contact points will have the desired gap or dwell angle from module to module without further adjustment.

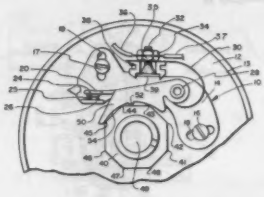
4,058,692

CONTACT BREAKER ASSEMBLY WITH BREAKER ARM SPACER BLOCK

William E. Clark, 246 E. J-12 Ave., Lancaster, Calif. 93534

Filed Nov. 29, 1976, Ser. No. 745,738
Int. Cl.[2] H01H *19/62*
U.S. Cl. 200—31 A **4 Claims**

1. A breaker point assembly for a distributor of an ignition system for an internal combustion engine, said breaker point assembly being adapted to be adjustably mounted on a movable breaker mounting plate in said distributor, said breaker point assembly being secured in proximity to a cam of said distributor, said breaker point assembly having a cam follower resiliently urged toward said cam and having a breaker arm extending therefrom, the breaker arm terminating in a first breaker contact point, the cam follower being operable between said cam and said breaker arm so as to impart an oscillatory movement to the breaker arm thereby intermittently separating said first contact point from a second contact point coincident with a high point on said cam, the first contact point being electrically isolated from the second contact point; the improvement including a self-adjustable cam follower structure, the structure comprising:



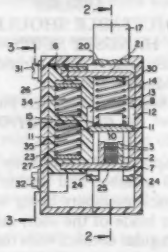
a spacing block mounted on said breaker arm, said spacing block including an arcuate cam abutment surface, the curvature of the arcuate abutment surface corresponding to an arc circumscribed by the cam and adapted to be resiliently urged against said cam; said breaker arm including a cam follower, said cam follower extending a predetermined distance from the arcuate abutment surface, said predetermined distance being proportional to a predetermined gap distance between said first and second contact points, the can follower thereby being adapted to resiliently urge said first contact point away from said second contact point said predetermined gap distance coincident with a high point on said cam, said cam follower being suspended between high points on said cam when said arcuate abutment surface of said spacing block is resiliently urged against said cam thereby permitting the first contact point to touch the second contact point.

4,058,693

ELECTRIC SNAP-ACTION SWITCH

Siegfried Schulz, Wuppertal; Karl G. Eicker, Remscheid, all of Germany, and August Reinke, Radevormwald, assignors to K. A. Schmersal & Co. Schaltgeratefabrik, Wuppertal-Barmen, Germany

Filed Sept. 22, 1975, Ser. No. 615,632
Claims priority, application Germany, Sept. 26, 1974, 2445957
Int. Cl.[2] H01H *13/28*
U.S. Cl. 200—67 F **9 Claims**



1. An electric snap action switch comprising:

a housing,

a push rod slidable on the housing to be operated for movement in one direction and provided with a spring return,

a jump member on the housing and mounting a contact unit to effect the electric switching, the jump member moving in the direction of the push rod, the jump member and push rod having confronting abutment faces spaced apart to permit movement of the jump member relative to the push rod and to induce movement of the jump member in both directions, the jump member having a pair of magnetic plates confronting each other, and the jump member also having a third plate adjacent one of said magnetic plates and spaced therefrom in the direction of sliding movement of the jump member,

a single stationary retention magnet on the housing and located between and in spaced relation with the magnetic plates of the jump member to attract and alternately engage said adjacent magnetic plates,

a single pre-tensioned compression bias spring oriented endwise of the direction of movement of the rod and having its ends seated on and between the third plate and the adjacent magnetic plate of the jump member, and

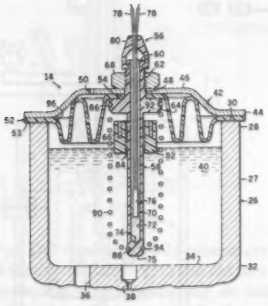
the push rod also having spaced spring seats confronting each other adjacent the jump member, the seats also confronting the ends of the compression spring for alternately bearing against and compressing the opposite ends of the spring when the rod is moved in opposite directions to produce accelerated movement of the jump member and contact unit in both directions.

4,058,694

MASTER CYLINDER RESERVOIR WITH VACUUM RELIEF DIAPHRAGM AND GUARDED FLUID LEVEL SENSOR

Robert O. Tuegel, St. Louis County, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Dec. 4, 1975, Ser. No. 637,643
Int. Cl.² H01H *35/18*
U.S. Cl. 200—84 C **11 Claims**



1. A brake fluid reservoir comprising:

a main body portion;

a cap mounted on the main body;

brake fluid level sensor means mounted on the reservoir and protruding thereinto for indicating a predetermined minimum level of brake fluid in the reservoir;

said fluid level sensor including float means for floating on the surface of the brake fluid;

diaphragm means sealingly secured in the reservoir for corresponding movement in response to a decrease in the level of brake fluid containing portion of the reservoir from an air containing portion;

means surrounding the float means for maintaining the movement of the diaphragm from interfering engagement with the movement of the float means;

said brake fluid level sensor means being:

an elongated portion;

said float means being movably mounted on the elongated portion and buoyant in the brake fluid responsive for maintaining a constant position with respect to the level of the brake fluid in the reservoir;

said means surrounding the brake fluid level sensor means being:

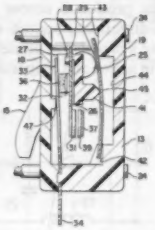
coil means mounted on the sensor and concentrically spaced around the elongated portion and the float means for permitting movement of the float relative to the elongated portion and for maintaining the movement of the diaphragm spaced from the elongated portion and from the float means.

4,058,695

CALIBRATED ELECTRICAL MOTOR SWITCH

Joseph Greenhut, 3333 Warrensville Ctr. Road, Shaker Hts., Ohio 44122

Filed Apr. 1, 1976, Ser. No. 672,666
Int. Cl.² H01H *35/10*
U.S. Cl. 200—153 V **7 Claims**



1. In an electrical switch, the combination of a pivotally movable conductive contact plate carrying a first electrical contact, a single fixed second electrical contact disposed in the path of circuit-closing movement of said plate, a circuit element in the form of a constant-tension cantilever-mounted leaf spring maintaining its free end bearing upon and in electrical contact with said plate and yieldably urging said plate into circuit-closing engagement with said second electrical contact, second spring means yieldably urging said plate into circuit-opening position in opposition to said cantilevered spring, said second spring means having a greater force than said cantilevered spring, movable switch-actuating means interposed between and engaging said plate and said second spring means to selectively isolate said plate from the contact-opening force exerted by said second spring means and cause closing of said contacts by said cantilevered spring in response to closing movement of said switch-actuating means, and terminal connector portions provided for said fixed contact and on said cantilever spring for connecting them into an electrical circuit.

4,058,696

INDUCTION HEATING APPARATUS COMPRISING A STATIC CONVERTER

Georges Antier, and Alain Thiodet, both of Paris, France, assignors to Tocco-Stel, Paris, France

Filed Dec. 15, 1975, Ser. No. 640,562
Claims priority, application France, June 17, 1975, 75.18963
Int. Cl.² H05B *5/04*
U.S. Cl. 219—10.77 **2 Claims**

1. In an induction heating apparatus having an induction heating coil for heating metallic objects coupled thereto, a static converter fed by a d.c. voltage from a rectifier circuit and including:

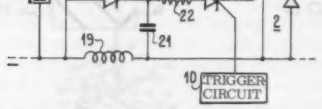
a resonant commutating circuit having a commutating capacitor and a commutating inductor connected in series, said commutating inductor being inductively coupled to said induction heating coil;

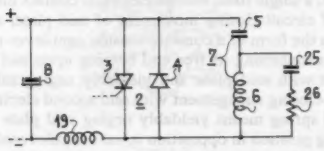
a bidirectional controlled switch having a gate controlled first thyristor and a diode connected in parallel to conduct in opposite directions and connected in parallel to said commutating circuit;

a charging inductor connecting the negative terminal of the rectifier circuit to the junction between said commutating circuit, the cathode of said first thyristor and the anode of said diode, the positive terminal of said rectifier circuit being connected to the junction between said commutating circuit, the anode of said first thyristor and the cathode of said diode, for providing said commutating capacitor with resonant charging to a voltage biasing said first thyristor positively and said diode negatively;

a triggering circuit for recurrently gating said first thyristor to make said bidirectional switch conducting for a full cycle of resonant current through said commutating circuit, the first thyristor conducting during the first half-cycle and the diode during the second half-cycle of said resonant current, whereafter said bidirectional switch ceases to conduct; and

an overshoot protection circuit for providing protection against spurious turning on of said thyristor due to overshoot voltages produced across said charging inductor when said bi-directional switch suddenly ceases to conduct, including a protection diode and a protection capacitor arranged in series and respectively connected by their





free terminals to the terminals of said charging inductor, the anode of the protection diode being connected to the junction between the charging inductor and the negative rectifier output terminal, so that it conducts in a direction opposite the current flow through the charging inductor when the bidirectional switch is conducting, wherein, to utilize the energy stored in the protection capacitor, when said first thyristor is being turned on, said triggering circuit comprising:

an auxiliary thyristor connected in series with a first, current-limiting resistor between the junction of the cathode of said protection diode and said protection capacitor and the gate of said first thyristor, said auxiliary thyristor having a gate fed by recurrent gating pulses for discharging said protection capacitor through itself and the gate-to-cathode junction of said first thyristor; and

a second, starting resistor connected between the positive rectifier output terminal and the junction of said protection capacitor with the cathode of said protection diode and said current limiting resistor for positively charging said protection capacitor when said converter is being switched on.

2. In an induction heating apparatus having an induction heating coil for heating metallic objects coupled thereto, a static converter fed by a d.c. voltage from a rectifier circuit and including:

a resonant commutating circuit having a commutating capacitors and a commutating inductor connected in series, said commutating inductor being inductively coupled to said induction heating coil, a bidirectional controlled switch having a gate controlled thyristor and a diode connected in parallel to conduct in opposite directions and connected in parallel to said commutating circuit;

a charging inductor connecting one of the terminals of said rectifier circuit to one of the junctions between the commutating circuit and the bidirectional switch, the other rectifier terminal being connected to the other junction thereof; and

a rise-rate protection circuit including a series arrangement of a protection capacitor and a protection resistor, wherein the improvement comprises means for connecting said protection capacitor-resistor series arrangement in parallel to said commutating inductor for forming an at least critically damped parallel resonant circuit therewith, whereby, the voltage across said protection capacitor, which follows with a phase lag the one across said commutating inductor while the bidirectional switch conducts, is applied to said thyristor in series with, and with an opposite polarity to the voltage across said commutating capacitor, when said bidirectional switch ceases to conduct, whereafter said commutating capacitor discharges aperiodically across said protection resistor and said commutating inductor in series.

4,058,697

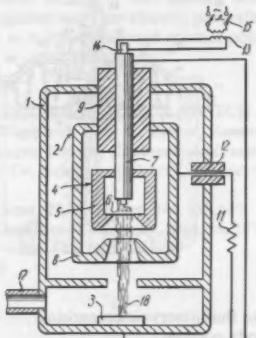
ELECTRON BEAM UNIT FOR HEAT TREATMENT BY ELECTRON BOMBARDMENT TECHNIQUE

Boris Grigorievich Sokolov, Nosovikninskoe shosse, 11, kv. 64, Zheleznodorozhny Moskovskoi oblasti, and Georgy Fomich Zaboronok, pereulok Obukha, 4, kv. 56, Moscow, both of U.S.S.R.

Continuation of Ser. No. 304,828, Nov. 8, 1972, abandoned. This application Nov. 3, 1975, Ser. No. 628,891

Int. Cl.[2] H01J 1/11

U.S. Cl. 219—121 EB **3 Claims**



1. An electron beam unit for heat treatment by the electron bombardment technique comprising a vacuum chamber with the item being processed contained therein; an electron beam gun disposed inside said vacuum chamber; said electron beam gun including an electron-emitting cathode, an accelerating electrode so disposed in relation to said cathode that said accelerating electrode in conjunction with said cathode shapes the emitted electrons to obtain an electron beam; insulator

means electrically insulating said cathode from said accelerating electrode, said insulator means being disposed between said item being processed and said accelerating electrode for also electrically insulating said accelerating electrode from ground; whereby the same electrical insulator strength is provided between the cathode and accelerating electrode and between the item and the accelerating electrode, a power supply disposed in external relationship to said vacuum chamber, the positive pole of said power supply being connected to said item, while the negative pole of the power supply is connected to said cathode of said electron beam gun; a resistor for limiting the discharge current that arises between said cathode and said accelerating electrode, one lead of said resistor being connected to said item and said positive pole of said power supply while the other lead of said resistor is connected directly to said accelerating electrode so that, in the normal operating mode of said electron beam gun, said resistor is shunted by said electron beam whereas the onset of a discharge between said cathode and said accelerating electrode will switch-in said resistor.

4,058,698

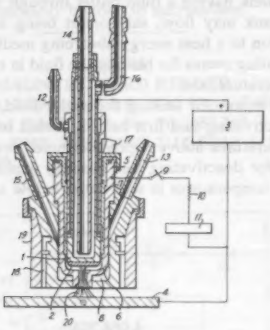
METHOD AND APPARATUS FOR DC REVERSE POLARITY PLASMA-ARC WORKING OF ELECTRICALLY CONDUCTIVE MATERIALS

David Grigorievich Bykhovsky, Konjushenny pereulok, 1/6, kv. 18, and Alexandr Ivanovich Danilov, Vasilievsky Ostrov, I6 linia, 79, kv. 15, both of Leningrad, U.S.S.R.

Continuation of Ser. No. 457,206, April 2, 1974. This application Oct. 30, 1975, Ser. No. 627,035

Int. Cl.[2] B23K *9/00*

U.S. Cl. 219—121 P **13 Claims**



1. A method of DC reverse polarity plasma-arc working of electrically conductive materials with the aid of a plasmatron, with a non-consumable electrode having an insert of high-melting material, said method comprising the steps of: coupling the non-consumable electrode of a positive terminal of a DC source; coupling another terminal of the DC source to the material being worked; coupling said other terminal of the DC source via a resistor to the cylindrical channel of a nozzle of the plasmatron; feeding a plasmaforming gas and a cooling agent into the plasmatron; striking a pilot electric arc between the non-consumable electrode and said nozzle of the plasmatron; striking a main arc between the non-consumable electrode and the material to be worked with a simultaneous quenching of the pilot arc; adjusting the operating current, the composition and consumption of the plasmaforming gas so that during the working process the zone of the anode arc near-the-electrode is greater than the diameter of the cylindrical portion of the nozzle channel; and placing at least a portion of the zone of the arc near-the-electrode in electric contact with said high-melting insert of the electrode.

4,058,699

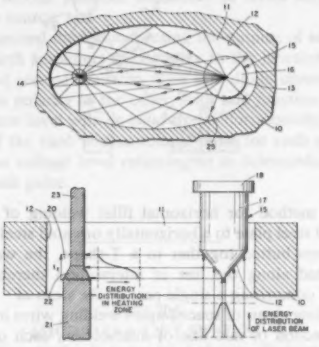
RADIANT ZONE HEATING APPARATUS AND METHOD

Curtis P. van Vloten, Somerville, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Aug. 1, 1975, Ser. No. 601,157

Int. Cl.[2] B23K *28/00*; F21V *7/00*; B01J *17/08*; G02B *5/10*

U.S. Cl. 219—121 LM **36 Claims**



1. An apparatus for focusing a radiation beam around the surface of at least one body within a relatively narrow band height, comprising in combination

a. means defining an elliptical cavity of predetermined height, said cavity having a first focal axis and a separate second focal axis extending therethrough, the wall of said cavity being optically reflective;

b. conically-configured reflecting means positioned within said elliptical cavity such that the longitudinal axis of said conically-configured reflecting means coincides with said first focal axis of said elliptical cavity whereby radiation from a source of coherent radiant energy can be directed longitudinally toward said conically-configured surface so as to strike the surface of said conically-configured reflecting means to be directed against said wall of said elliptical cavity and to be thereby reflected to form a heating zone of controlled length and of substantially uniform energy distribution at any one level along said length of said heating zone around said second focal axis of said elliptical cavity.

28. A method for forming around the surface of a body a heating zone of radiant energy having a relatively narrow, controllable height, comprising the steps of

a. providing an elliptical cavity of a predetermined height and having two spaced-apart optical axes;

b. positioning within said elliptical cavity a conically-configured reflector so that the longitudinal axis of said reflector coincides with one of the optical axes of said elliptical cavity;

c. directing a beam of radiant energy longitudinally onto said conically-configured surface of said conically-configured reflector whereby said radiant energy is reflected onto the wall of said elliptical cavity and thereby through further reflection is concentrated along the other of said optical axis to form a heating zone of a predetermined length; and

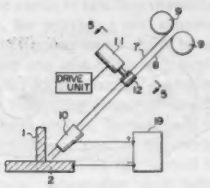
d. positioning the body, which is to be heated in said heating zone, within said elliptical cavity such that its axis coincides with said other of said optical axes.

4,058,700

METHOD FOR HORIZONTAL FILLET WELDING OF STEEL PLATES

Yoshinori Ito, Nishinomiya; Masaaki Kawai, Ashiya, and Masahiko Ikeda, Minoo, all of Japan, assignors to Sumitomo Metal Industries Ltd., Osaka, Japan

Filed Feb. 3, 1976, Ser. No. 654,950
Int. Cl.[2] B23K 9/00
U.S. Cl. 219—137 R 6 Claims



1. A method for horizontal fillet welding of a vertically oriented steel plate to a horizontally oriented steel plate which have been butted together to a T-shape, the welding being conducted along the line of intersection therebetween, the method comprising a single pass of the steps of

directing a pair of spaced-apart welding wires in the general direction of said line of intersection, each of said wires having a predetermined diameter, said wires being disposed such that one is directed towards the vertically oriented steel plate and the second is directed toward the horizontally oriented steel plate and such that the centerline therebetween intersects with the line of intersection between said plates; and

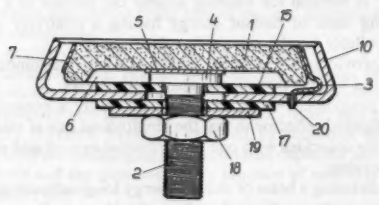
alternately feeding during the single pass said wires at predetermined time intervals towards said plates; and when feeding said wires, feeding said wire directed towards said vertically oriented plate at a rate equal to or less than the rate of feeding said wire directed towards said horizontally oriented plate.

4,058,701

GLOW ELEMENT ARRANGEMENT FOR ELECTRIC CIGARETTE LIGHTERS

Carl F. Gruber, Frankfurt am Main-Griesheim, and Georg Seibel, Dreieichenhain, both of Germany, assignors to Schoeller & Co. Elektrotechnische Fabrik GmbH & Co., Frankfurt, Germany

Continuation-in-part of Ser. No. 575,079, May 6, 1975, abandoned. This application Dec. 21, 1976, Ser. No. 753,011
Claims priority, application Germany, May 14, 1974, 2423431
Int. Cl.[2] F23Q 7/22
U.S. Cl. 219—270 11 Claims



1. A glow element arrangement for electric cigarette lighters comprising:

a disk-shaped semiconductor element of predetermined geometric configuration;

first and second electrical contacts being electrically and mechanically secured to the element;

a metallic pan surrounding said disk, said pan being electrically connected to said first contact; and

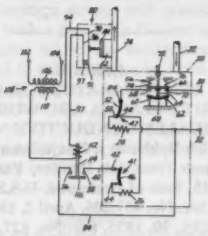
a metal supporting bolt for supporting said disk and said pan, said bolt passing through a bore in the bottom of the pan and being electrically insulated therefrom, said bolt being electrically connected to said second electrical contact.

4,058,702

FLUID HEATING APPARATUS

James B. Jerles, Tierra Verde, Fla., assignor to Electro-Thermal Corporation, Pensacola, Fla.

Filed Apr. 26, 1976, Ser. No. 679,881
Int. Cl.[2] H05B 1/00
U.S. Cl. 219—321 9 Claims



1. Fluid heating apparatus comprising:

a fluid tank having a fluid outlet through which fluid from the tank may flow, said outlet being in heatdissipating relation to a heat energy absorbing medium;

first heating means for heating the fluid in said tank to a first temperature; and

control means for sensing the outlet fluid temperature and for activating said first heating means responsive to fluid temperatures above a predetermined level in said outlet and for deactivating said heating means in response to fluid temperatures in said outlet below said level.

4,058,703

CONTROL SYSTEM FOR FRYING APPARATUS

George M. Price, Shreveport, La., assignor to The Frymaster Corporation, Shreveport, La.

Division of Ser. No. 479,761, June 17, 1974, Pat. No. 3,870,859. This application Feb. 18, 1975, Ser. No. 550,349
Int. Cl.[2] H05B 1/02
U.S. Cl. 219—492 9 Claims

1. A control circuit for pyrolytic cleaning of heating elements in a cooking system comprising:

a power supply;

actuable relay means in said circuit for connecting and disconnecting the heating elements to the power supply;

timing control means associated with the relay means for cyclically actuating and deactuating the relay means to gradually raise the temperature of the heating elements; and

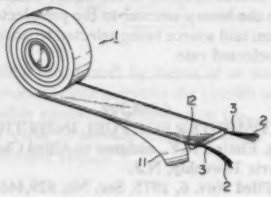
switching means in thermal communication with the heating elements for sensing the temperature of the elements and for overriding the relay means to disconnect the heating elements from the power supply when the elements reach a predetermined temperature.

4,058,704

COILABLE AND SEVERABLE HEATING ELEMENT

Masao Shimizu, Tokyo, Japan, assignor to Taeo Kim, Fuchu, Japan

Filed Dec. 8, 1975, Ser. No. 638,910
Claims priority, application Japan, Dec. 27, 1974, 49-3820; Dec. 27, 1974, 49-3819
Int. Cl.² H05B 3/34
U.S. Cl. 219—528 4 Claims



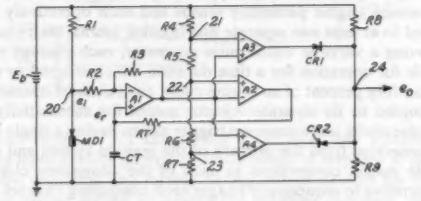
1. A heating element comprising a flexible tape rolled into a coil, said tape including an elongate carrier of woven cloth impregnated with a flexible carbon-containing resistance layer enveloped in a flat resinous sheath, a layer of inorganic fibers forming a flexible heat shield on one side of said carrier within said sheath, and two transversely spaced conductors extending adjacent the longitudinal edges of said carrier over the entire length thereof in conductive contact with said resistance layer, said tape being transversely severable into sections with exposure of terminal portions of said conductors by removal of parts of said sheath and said carrier, said sheath having an adhesive-coated surface on the side of said heat shield and a backing strip detachably bonded to said surface.

4,058,705

MAGNETIC CARD READER

John W. Cannon, 7129 Gerald Ave., Van Nuys, Calif. 91406

Filed Feb. 5, 1976, Ser. No. 655,388
Int. Cl.² G06K 7/08; G06G 7/14; G11B 5/12
U.S. Cl. 235—449 4 Claims



1. In a reader for a coded card having a plurality of magnetized spots of predetermined polarity, the combination of:

a housing including guide means for receiving a card;

magnetodiode means carried in said housing for motion relative to the magnetized spots of the card;

a voltage source connected across said magnetodiode means whereby a change in magnetic field at said magnetodiode means produces a voltage signal;

a first amplifier having said voltage signal connected as one input thereof;

a second amplifier having the first amplifier output connected as one input thereof;

a time delay circuit connected between the second amplifier output and the second input of said first amplifier providing a variable reference voltage input to said first amplifier forming a self balancing nulling circuit so that the voltage at the second input of said first amplifier tracks the voltage at the first input of said first amplifier with a delay provided by said time delay circuit;

third and fourth amplifiers, each having the first amplifier output connected as one input thereof;

a voltage divider circuit connected across said voltage source and providing separate reference voltages as second inputs to each of said second, third and fourth amplifiers, with said second amplifier intermediate third and fourth amplifiers;

first and second resistors connected in series across said voltage source; and

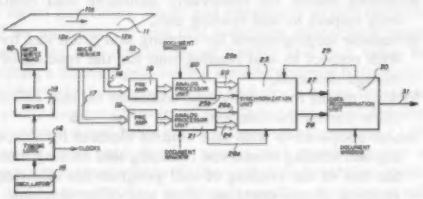
first and second diodes connecting the outputs of said third and fourth amplifiers respectively to the junction of said first and second resistors, with one diode connected in opposite polarity to the other, with said junction providing a three level voltage pulse stream corresponding to the code of the card with a voltage pulse for each spot and with the voltage level returning to an intermediate level after each pulse.

4,058,706

MICR DATA LIFT SYSTEM

Charles T. Kao, Garland; James O. Lafevers, Richardson, and Donny R. Walker, Carrollton, all of Tex., assignors to Recognition Equipment Incorporated, Dallas, Tex.

Filed Apr. 23, 1976, Ser. No. 679,676
Int. Cl.² G06K 7/08, 7/14, 9/18; G11B 5/10
U.S. Cl. 235—449 14 Claims



1. A method of formatting conditioned responses of a pair of asynchronously operating multi-element read heads to accommodate a synchronization to a common fixed frequency, which comprises:

a. selecting at a scan rate a first maximum response of a first of said pair and a second maximum response of a second of said pair;

b. generating a first data peak signal at said scan rate if said first maximum response exceeds a reference width, and a second data peak signal if said second maximum response exceeds said reference width;

c. normalizing said first and said second maximum response, and respectively forming therefrom a first and a second reference threshold;

d. normalizing said conditioned responses of said pair;

e. converting normalized responses of said first of said pair to a first discrete logic level signal under the control of said first reference threshold, and converting normalized responses of said second of said pair to a second discrete logic level signal under the control of said second reference threshold;

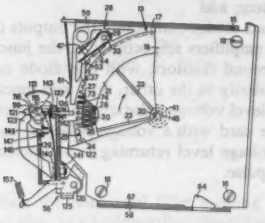
f. sampling said first and said second discrete logic level signals to form a first and a second NRZ data signal, respectively, in response to said first and said second data peak signals; and

g. synchronizing said first and said second NRZ data signals with said common fixed frequency.

4,058,707
SYSTEM FOR INTRODUCING THE INSTRUCTIONS OF A PROGRAM INTO A PROGRAMMABLE OFFICE MACHINE

Nicolo Giolitti, and Sergio Garberi, both of Ivrea (Turin), Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Apr. 21, 1976, Ser. No. 679,107
Claims priority, application Italy, May 2, 1975, 68115/75
Int. Cl.[2] G06K *17/00, 7/04;* B41J *5/30*
U.S. Cl. 235—448 14 Claims



1. In a system for introducing the instructions of a program into an accounting, calculating and similar programmable office machine which performs data-processing operations, comprising in combination: a container, a drum rotatably mounted therein, a series of code information storage elements defining said program, means for removably mounting said elements around the periphery of said drum, a control element mounted on said drum to indicate the end of said program; and

a reading unit mounted on said office machine for reading said storage elements,

mounting means for removably mounting said container with respect to said reading unit,

actuatable feeding means for rotating said drum step by step with respect to said reading unit for the reading of said storage elements,

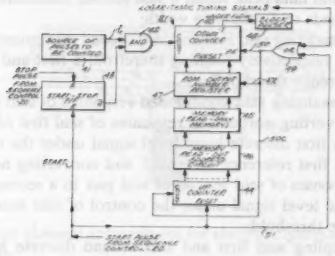
locking means for locking said container on said office machine during the rotation of said drum, and

means cooperative with said control element for deactivating said feeding means and releasing said locking means at the end of the reading of said program for allowing the removal of said container from said office machine.

4,058,708
BAR CODE READER AND DECODER

Paul Sherer, Costa Mesa, and Gerald Paul Hester, Santa Ana, both of Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.

Filed Dec. 5, 1975, Ser. No. 638,056
Int. Cl.[2] H03K *21/36*
U.S. Cl. 235—92 CC 21 Claims



1. A digital-logarithmic timing signal generator for generating successive digital timing signals that are logarithmically related comprising

a binary counter for counting down preselected numbers preset into the counter and providing output signals therefrom at the same preselected count thereby generating the successively logarithmically related digital timing signals,

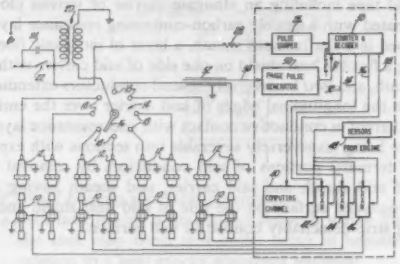
means coupled to the binary counter for responding to the output signals therefrom to enter a succession of preselected logarithmically related numbers into the binary counter, the preselected numbers being selected on the basis of any predetermined logarithmic base, other than the base two, so that the successive output signals and thereby the timing signals are logarithmically time related,

and a pulse source coupled to the binary counter for counting down the binary counter to the preselected count, the pulses from said source being selected to occur at a continuous preselected rate.

4,058,709
CONTROL COMPUTER FOR FUEL INJECTION SYSTEM

E. David Long, Elmira, N.Y., assignor to Allied Chemical Corporation, Morris Township, N.J.

Filed Nov. 6, 1975, Ser. No. 629,443
Int. Cl.[2] F02M *51/00;* G06G *7/66*
U.S. Cl. 364—424 11 Claims



1. A control computer for metering fuel in a fuel injection system for an engine having a plurality of fuel injection means, an ignition system with primary and secondary circuits operative to generate a sequence of ignition pulses, an engine cycle time, a rotating output shaft, and at least one engine parameter sensor, said computer comprising: a plurality of independent computing channels each operatively coupled to at least one common engine parameter sensor and each operatively coupled to at least one separate fuel injector means, each channel having a variable width pulse generator, each channel available for operation for a time duration which is equal to more than fifty percent of an engine cycle, each channel operatively coupled to its separate injector means for substantially the entire cycle; and a common trigger means having a single input connection from the primary of the ignition system and separate output connections to each of the computing channels operative to sequentially trigger each computing channel once per engine cycle during normal operation of the engine in timed relationship to the engine output rotation.

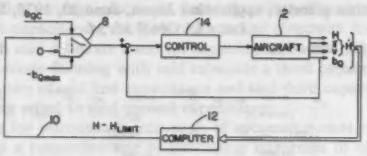
4,058,710
PROCESS FOR PREVENTING UNDESIRED CONTACT WITH LAND OR WATER BY LOW-FLYING AIRCRAFT

Helmut Altmann, Immenstaad, Germany, assignor to Dornier GmbH., Germany

Filed Mar. 1, 1976, Ser. No. 662,971
Claims priority, application Germany, Mar. 14, 1975, 2511233
Int. Cl.[2] G06G *7/78*
U.S. Cl. 364—433 6 Claims

1. A process for preventing undesired contact with land or water by low-flying aircraft which are assigned a minimum altitude and which are provided with instruments for measuring the flight data, i.e., altitude, airspeed, angle of path, and transverse acceleration (b_Q), when gravitational acceleration is eliminated,

comprising measuring the rate of descent (H), and altitude to (H) compute a limiting altitude (H_{limit}) determined from its ability for transverse acceleration and its other flight data,



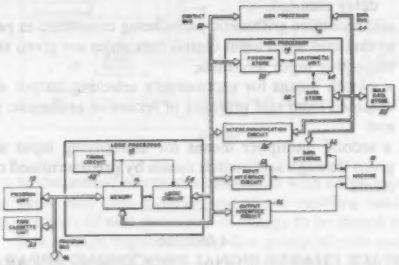
and controlling the aircraft by means of an automatic feedback controller which provides the aircraft with the maximum feasible transverse acceleration (b_{Qmax}) when for a measured value of altitude (H), the altitude is below the limiting altitude (H_{limit}).

4,058,711

ASYNCHRONOUS DUAL FUNCTION MULTIPROCESSOR MACHINE CONTROL

Robert Michael Ondercin, and Paul Stephen Borzcik, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 16, 1976, Ser. No. 677,712
Int. Cl.² G06F *15/46, 15/16*
U.S. Cl. 364—101 **16 Claims**



1. An apparatus for controlling a machine, said machine having input devices generating input signals in response to the machine operation and further having output devices for receiving output signals to modify the machine operation, the apparatus comprising:

a. a single data bit contact bus;

b. means connected between the contact bus and the devices on the machine for interfacing the input and output signals between the contact bus and the input and output devices, respectively;

c. a single data bit logic processor means connected to the contact bus and reponsive to the input signals for generating the output signals in response to the machine operating in accordance with a stored set of logic instructions;

d. a data processor means connected to the contact bus for producing a further input signal by executing asynchronously with the logic processor means a stored set of arithmetic instructions in response to one of the output signals; and

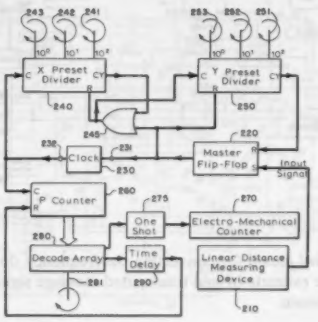
e. data communication means connected to the data processor means.

4,058,712

ACRE COUNTER

Wesley J. Bachman, Mount Zion, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed Apr. 8, 1976, Ser. No. 675,150
Int. Cl.² G06F *15/20;* H03K *21/36*
U.S. Cl. 364—564 **19 Claims**



1. A system for measuring the amount of area traversed by a vehicular implement comprising: linear distance measuring means for generating an electrical signal having a characteristic which varies in accordance with the distance traversed by said implement; electronic switch having a first switching state and a second switching state for developing a control signal having a first value when aid switch means is in said first state and a second value when said switch means is in said second state, said electronic switch means being coupled to said electrical signal generating means and responsive to said electrical signal for switching to said first switching state; clock means responsive to said control signal having said first value for generating a timing signal having a predetermined frequency; a first presettable divider coupled to said clock means for counting a preset number of cycles of said timing signal and developing an output signal having a frequency corresponding to the number of times said divider counts said preset number of cycles; a second presettable divider coupled to said first presettable divider for counting said preset number of cycles of said output signal and developing a switching signal which is applied to said electronic switch means to switch it to said second switching state; counter means coupled to said clock means for counting the total number of cycles of said timing signal during the period of time that said electronic switch means is in said first switching state and developing a corresponding area signal; and display means responsive to said area signal for visually displaying the value of said area signal, whereby the total area covered by the implement during a given period of time is visually displayed.

4,058,713

EQUALIZATION BY ADAPTIVE PROCESSING OPERATING IN THE FREQUENCY DOMAIN

Michael J. DiToro, Massapequa, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

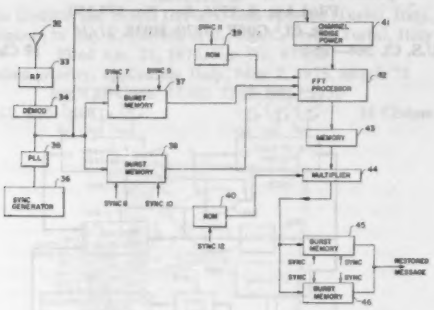
Filed Sept. 20, 1976, Ser. No. 724,872
Int. Cl.² G06F *15/34*
U.S. Cl. 364—724 **26 Claims**

1. A signal processor for processing a message signal received over a time-spread or frequency-spread medium to produce an estimate of the transmitted message signal in which a known signal is transmitted along with said message signal and received therewith, comprising:

a. first means for converting all said received signals to the frequency domain;

b. second means for providing a representation of said known signal;

c. processing means responsive to said first and second means to produce an estimate of the transmitted message signal in the frequency domain; and,



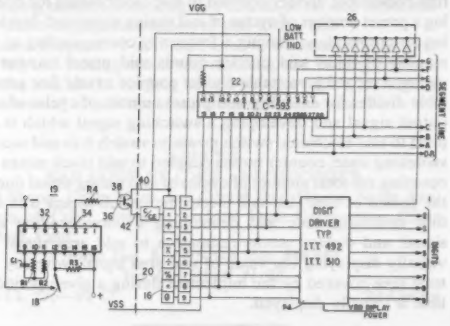
d. third means for converting the frequency domain form of the estimate of said transmitted message signal to the time domain.

4,058,714

SELECTIVELY OPERATED, CLOCK-CONTROLLED REPETITIVE CALCULATOR

Arthur L. Mostow, 1184 Green Bay Road, Highland Park, Ill. 60035

Filed June 10, 1976, Ser. No. 694,519
Int. Cl.[2] G06F *7/50, 7/52*
U.S. Cl. 364—754 **8 Claims**



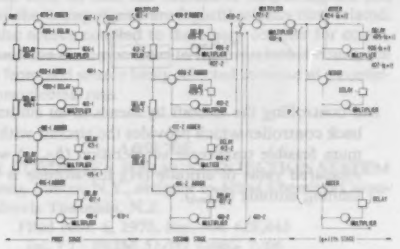
1. A device for performing multiple repetitive mathematical calculations including in combination: a calculator including means to enter a desired number; storage means to store a number representing a total, means for displaying said number representing the total, means for combining said entered number with said number representing a total stored in said storage means to develop a new number representing a total, and a clock circuit coupled to said calculator and operative at predetermined intervals to operate said combining means, said clock circuit including an oscillator selectively operative to repetitively develop pulses at a predetermined repetition rate and switch means coupled to said oscillator and said combining means operative in response to each of said pulses to switch and operate said combining means to combine said entered number with said number representing a total to develop a new number representing a new total.

4,058,715

SERIAL FFT PROCESSING UNIT

Kunihiko Niwa, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed June 18, 1976, Ser. No. 697,659
Claims priority, application Japan, June 20, 1975, 50-76216
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—726 **12 Claims**



1. An FFT processing unit comprising one or more serially connected arithmetic stages, each arithmetic stage having

a. a plurality of recursive arithmetic paths, each recursive arithmetic path consisting of

1. a delay element,
2. a simplified multiplier means fed with an output signal obtained from said delay element for multiplying said output signal by any one of ± 1 and $\pm j$ where j is equal to $\sqrt{-1}$, and
3. an adder means fed with a serial input digital data series and an output signal of the simplified multiplier means at its first and second input terminals, respectively, and feeding its output signal to an input terminal of the delay element,

said recursive arithmetic paths being connected in parallel so that said serial input digital data series are given at their respective input terminals;

b. a switch means for successively selecting output signals obtained from said plurality of recursive arithmetic paths; and

c. a second multiplier means for multiplying input signals given through said switch means by predetermined coefficients.

4,058,716

SURFACE CHARGE SIGNAL PROCESSING APPARATUS

Howard S. Goldberg, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 6, 1976, Ser. No. 702,942
Int. Cl.[2] G06G *7/19;* G11C *11/40*
U.S. Cl. 364—824 **8 Claims**

1. Signal correlator apparatus comprising

a substrate of semiconductor material having a major surface,

first means forming a first plurality of charge storage regions adjacent said major surface of said substrate,

second means forming a second plurality of charge storage regions adjacent said major surface of said substrate, each forming with a respective first charge storage region a respective charge storage cell,

said first means including a first plurality of electrodes, each electrode insulatingly overlying a respective charge storage region of said first plurality, said electrodes being interconnected,

said second means including a second plurality of electrodes, each insulatingly overlying a respective charge storage region of said second plurality,

a plurality of intermediate charge storage regions adjacent said major surface of said substrate, each separating first

and second storage regions of a respective charge storage cell,

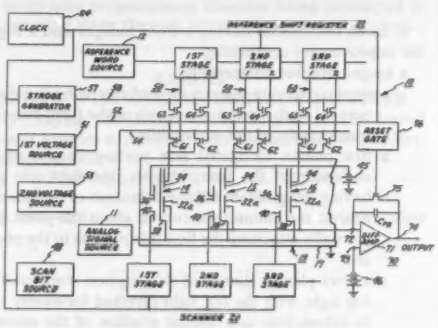
a plurality of first gating electrodes each insulatingly overlying a respective one of said intermediate regions, said gating electrodes being interconnected,

each first storage electrode forming with said substrate a first capacitance, each second storage electrode forming with said substrate a second capacitance, each first gating electrode forming with said substrate a third capacitance, the sum of said first capacitance and said third capacitance being equal to said second capacitance,

means for introducing into each of successive ones of said cells a respective one of successive quantities of charge, each quantity being proportional to a respective sample of a time varying analog signal, each quantity of charge including first and second portions of equal value, each first portion of a quantity of charge being solely contained in the first storage region of a respective cell and each second portion of said quantity of charge being contained in the second storage region of said respective cell,

means for applying to each of said second storage electrodes a voltage waveform selected from a first voltage waveform and a second voltage waveform of the same periodicity in response to a respective one of a series of successive binary bits of a reference word,

a. the bits of a first value in said series of bits forming a first group of bits and providing said first voltage waveform



to the second electrodes associated with a first group of cells, said first voltage waveform enabling said first portions of said quantities of charge to be stored in said first storage regions of said first group of cells and said second portions of said quantities of charge to be stored in the second storage regions of said first group of cells during a first interval of a period thereof, and causing said first portions of said quantities of charge to be transferred to said second storage regions of said first group of cells during a second interval of a period thereof,

b. the bits of a second value in said series of bits forming a second group of bits and providing said second voltage waveform to the second electrodes associated with a second group of cells, said second voltage waveform enabling said first portions of said quantities of charge to be stored in said first storage regions of said second group of cells and said second portions of said quantities of charge to be stored in the second storage regions of said second group of cells during a first interval of a period thereof, and causing said second portions of said quantities of charge to be transferred to said first storage regions of said second group of cells during a second interval of a period thereof,

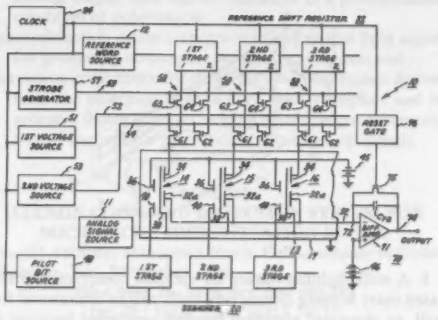
means connected in circuit with said first storage electrodes for sensing the total net charge transferred to and from said first charge storage regions during said second interval.

4,058,717

SURFACE CHARGE SIGNAL PROCESSING APPARATUS

William E. Engeler, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 6, 1976, Ser. No. 702,943
Int. Cl.[2] G06G 7/19; G11C 11/40
U.S. Cl. 364—824 8 Claims



1. Signal correlator apparatus comprising

a substrate of semiconductor material having a major surface,

first means forming a first plurality of charge storage regions adjacent said major surface of said substrate,

second means forming a second plurality of charge storage regions adjacent said major surface of said substrate, each separated from a respective charge storage region of said first plurality by a respective intermediate region and forming a respective charge storage cell therewith,

said first means including a first plurality of electrodes, each electrode insulating overlying a respective charge storage region of said first plurality, said electrodes being interconnected,

said second means including a second plurality of electrodes, each insulatingly overlying a respective charge storage region of said second plurality,

means for introducing into each of successive ones of said first charge storage regions a respective one of successive quantities of charge, each quantity being proportional to a respective sample of a time varying analog signal,

means for applying to each of said second storage electrodes a voltage waveform selected from a first voltage waveform and a second voltage waveform of the same periodicity in response to a respective one of a series of successive binary bits of a reference word,

a. the bits of a first value in said series of bits forming a first group of bits and providing said first voltage waveform to the second electrodes associated with a first group of cells, said first voltage waveform causing charges to be transferred during a first interval of a period thereof from the first charge storage regions of said first group of cells to the second charge storage regions thereof, and causing said transferred charge to be returned during a second interval,

b. the bits of a second value in said series of bits forming a second group of bits and providing said second voltage waveform to the second electrodes associated with a second group of cells, said second voltage waveform causing charge to be transferred from first charge storage regions of said second group of cells to the second charge storage regions thereof during said second interval,

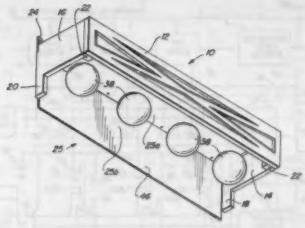
means connected in circuit with said first storage electrodes for sensing the total net charge transferred to and from said first charge storage regions during said second interval.

4,058,718

SOFFIT LIGHTING

James J. Palka, Arlington Heights, Ill., assignor to General Bathroom Products Corporation, Elk Grove Village, Ill.

Filed Aug. 12, 1976, Ser. No. 713,689
Int. Cl.[2] F21V 33/00; A47B 97/00
U.S. Cl. 362—235 3 Claims



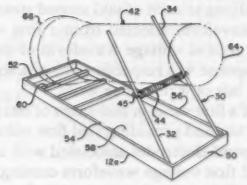
1. A soffit lighting fixture for cabinets comprising an elongated outer housing having side walls and an ornamental front wall, an elongated electrical housing positioned between and anchored to said side walls interiorally of said outer housing, said electrical housing having side, end and top walls, an L-shaped plate, a first leg of said plate anchored to said electrical housing and forming a cover therefor, said first leg having a plurality of spaced lamp sockets secured thereto and extending downwardly, the second leg of said plate depending from said first leg forming a rear wall for said fixture and extending downwardly below said outer housing side walls, both of said legs having reflective properties, means to secure said fixture to a wall surface, and means for electrically connecting said sockets.

4,058,719

ADJUSTABLE FLASHLIGHT HOLDER

Peter G. Chopp, 9001 Golf Road, Des Plaines, Ill. 60016

Filed Mar. 21, 1977, Ser. No. 779,343
Int. Cl.[2] F21L 15/20
U.S. Cl. 362—190 12 Claims



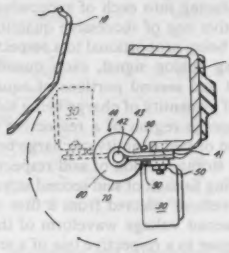
1. A holder for a flashlight and the like comprising:
a base member having a substantially flat upper surface;
said flat surface defining at least one transversely oriented upstanding edge between the ends of said base member;
hinge means at one end of said base member;
a bifurcated support member having extending spaced leg members and a cross member engageable with said hinge means and adapted to be moved to a plurality of angular positions about said hinge means and upwardly from the flat surface of said base member;
at least one elastic member suspended between the bifurcated legs of said support member whereby a flashlight may be placed with one end upon said base and engaging said upstanding edge, with the other end of the flashlight resting on said elastic member.

4,058,720

SUSPENSION MEANS FOR AUTOMOBILE FOG LIGHT

Lonnie C. Renfrow, 3625 N. Terry, Oklahoma City, Okla. 73111

Filed Mar. 1, 1976, Ser. No. 662,468
Int. Cl.[2] B60Q 1/00; E05F 1/12
U.S. Cl. 362—82 1 Claim



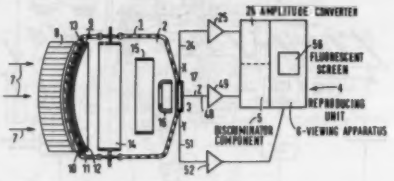
1. In an automobile having a front bumper and a fog light, the improvement comprising:
a hinged bracket comprising:
a pivot pin having the axis thereof extending in a direction parallel to the longitudinal axis of the front bumper and transversely of the automobile;
a first planar, elongated side portion connected to the underside of the front bumper, the first side portion having integral tabs adjacent the ends of the side thereof nearest the automobile curved about the pivot pin and pivotally attaching the first side portion to the pivot pin; and
a second planar, elongated side portion connected to the fog light with the fog light directed forwardly relative to automobile in a normal position of the second side portion, the second side portion having integral tabs adjacent the ends of the side thereof nearest the automobile curved about the axis of the pivot pin in alternating manner with the tabs of the first side portion and pivotally attaching the second side portion to the pivot pin; and
a coil spring assembly comprising:
a coil spring having opposite ends, the coil spring being disposed coaxially around the pivot pin intermediate the ends of the pivot pin and between the tabs of the first and second side portions;
a cylindrical spring housing, open at its ends, surrounding the pivot pin and the coil spring intermediate the ends of the pivot pin and between the connecting tabs, with one end of the coil spring being removably connected to the spring housing and turning therewith;
a pair of collars loosely encircling the pivot pin and journalled on the ends of the spring housing, with the opposite end of the coil spring being removably connected to the one of the collars adjacent thereto and turning therewith; and
means on the one collar and on the spring housing, extending radially outwardly therefrom for abutting engagement with the first and second side portions respectively to yieldably urge the second side portion toward the normal position thereof in response to the action of the coil spring, the tension applied to the coil spring being adjustable, as determined by the relative position of the spring housing.

4,058,721

GAMMA CAMERA

Karl Hans Reiss, Erlangen; Otto Kotschak, Buckenhof, and Bernhard Conrad, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 13, 1976, Ser. No. 658,050
Claims priority, application Germany, Feb. 19, 1975, 2507150
Int. Cl.[2] H01J *31/50;* G01T *1/18*
U.S. Cl. 250—213 VT 10 Claims



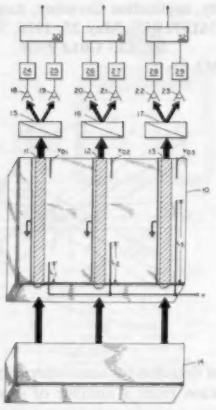
1. In a gamma camera within a signal generating system, encompassing a stage for converting an image which is to be produced into an electron image; and including a locating system connected to the output of said stage, said locating system emanating signals facilitating the pictorial reproduction of the incident radiation, the improvement comprising: said converting stage including an electron-transmissive window; and a multi-wire proportioning chamber being connected to said converting stage through intermediary of said window.

4,058,722

ELECTRO-OPTIC ANALOG/DIGITAL CONVERTER

Henry F. Taylor, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 29, 1976, Ser. No. 727,744
Int. Cl.[2] G02F *7/00*
U.S. Cl. 250—225 7 Claims



1. An electro-optic analog-to-digital converter for digitizing an analog electrical potential V comprising:

a plurality of identical dielectric channel optical waveguides fabricated in a single-crystal substrate of linear electro-optic material;

a source of linearly polarized light adapted to transmit its output light energy along each of said waveguides;

a plurality of electrodes disposed contiguous to said optical waveguides for impressing electric fields thereacross upon the application of electrical potentials;

means for receiving said analog electrical potential V and applying an electrical potential to each of said electrodes such that the product of the potential applied to the n^{th} electrode of length L_n is

$$V_n L_n = VL_1 \times 2^{n-1}$$

where $n = 1, 2, 3, \ldots$;

a means responsive to light in each said waveguide for producing output light signals indicative of a predetermined condition of polarization;

photodetection means responsive to said output light signals for producing commensurate electrical signals; and

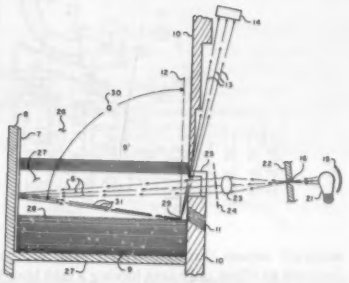
an analog comparator for receiving electrical signals derived from the emergent light of each said waveguide and responsive thereto for producing a binary output representative of the relative amplitudes of its received signals.

4,058,723

ILLUMINATION AND DETECTION SYSTEM FOR MICROFICHE IDENTIFICATION MARKS

Romuald Anthony, Manhattan Beach, Calif., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed May 26, 1976, Ser. No. 690,352
Int. Cl.[2] G02F *1/01;* H01J *39/12*
U.S. Cl. 250—235 14 Claims



1. Apparatus for producing a representation of identification marks in an identification area on an exposed card in a stack of transparent cards, comprising:

a. a light source,

b. light polarizing means,

c. means for directing the light from the source to the identification area to impinge on the exposed card at an angle of incidence greater than the polarizing angle of the cards, said means including reflecting means positioned adjacent said transparent cards opposite the identification area to receive the light from the light source and direct it to impinge on the identification area at an angle of incidence greater than the polarizing angle of the cards and said means further including light shielding means to generally confine the light incident on the card to the identification area and means to detect said light.

4,058,724

ION SCATTERING SPECTROMETER WITH TWO ANALYZERS PREFERABLY IN TANDEM

James T. McKinney, Stillwater, and Robert F. Goff, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 27, 1975, Ser. No. 591,104
Int. Cl.[2] H01J *37/26*
U.S. Cl. 250—309 10 Claims

1. In a method for analyzing the surface of a material comprising

generating a primary ion beam,

directing said beam along a preselected path to impinge

upon and be scattered from a surface of the material to be analyzed,

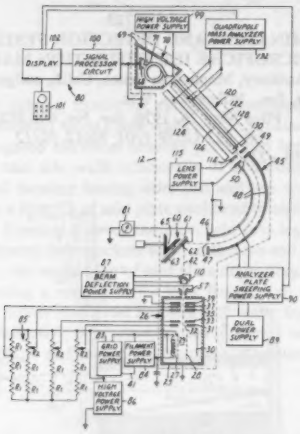
transmitting ions indicative of surface atoms having a given mass, and

receiving the transmitted ions and converting the received ions into an electronic signal characteristic of said surface atoms,

the improvement wherein the step of transmitting comprises

positioning two independent analyzer means in tandem adjacent to said surface for determining a kinetic parameter and the mass of ions, wherein ions scattered from said surface at a predetermined angle are accepted and a portion of accepted ions are passed therethrough,

establishing a time varying predetermined condition definitive of a given kinetic parameter within the first of said



analyzer means through which said accepted ions are directed to allow only ions having a said kinetic parameter to pass therethrough,

establishing another predetermined condition definitive of a given mass within the second of said analyzer means through which said accepted ions are directed to allow only ions having a said given mass therethrough such that the mass and kinetic parameter of the detected ions are both known, thereby enabling the direct inference of the mass of surface atoms from which the ions are scattered, and

detecting the scattered ions passing through both of said analyzer means that have a given kinetic parameter and a given mass to generate a signal characteristic of surface atoms having a given mass.

4,058,725

INFRARED ABSORPTION SPECTROMETER EMPLOYING A DUAL OPTOACOUSTIC DETECTOR

Harry E. Aine, 1804 Stierlin Road, Mountain View, Calif. 94040

Filed Apr. 4, 1975, Ser. No. 565,008
Int. Cl.[2] G01M *21/26*
U.S. Cl. 250—343 **22 Claims**

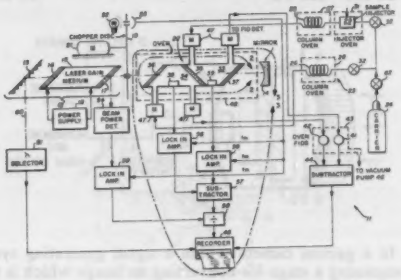
1. In a method of laser absorption detection of spectroscopy of an unknown sample of interest the steps of:

producing a laser beam of coherent infrared radiation;

providing first and second sample regions partitioned from each other and spaced apart serially along the common beam path;

interposing first and second samples in the respective first and second sample regions for absorbing coherent radiation from the laser beam and for converting the absorbed coherent radiation into a second form of energy, one of said samples being the unknown sample of interest for which the absorption from the laser beam is to be detected;

coupling detector means in energy exchanging relation with respective ones of said first and second sample regions for detecting the second form of energy resulting from the absorption of energy, if any, from the coherent infrared beam by the respective first and second samples; and



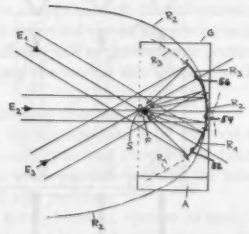
deriving an output corresponding to the difference between the detected second forms of energy derived from the respective first and second sample regions for detection of the absorption of the laser beam by the unknown sample of interest.

4,058,726

RADIATION DETECTOR

Hansjoachim Paschedag, and Hansjürg Keller, both of Mannedorf, Switzerland, assignors to Cerberus AG, Switzerland, Mannedorf, Switzerland

Filed July 22, 1976, Ser. No. 707,834
Claims priority, application Germany, Aug. 9, 1975, 2535657; May 18, 1976, 7615724[U]; May 25, 1976, 7616715[U]
Int. Cl.[2] G01J *1/04*
U.S. Cl. 250—353 **11 Claims**



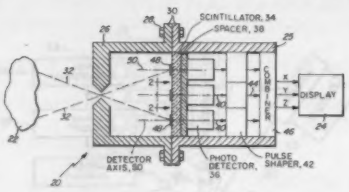
1. A radiation detector for simultaneously detecting electromagnetic radiation from a number of separate receiving regions, comprising a single radiation receiver common to said number of separate receiving regions, a plurality of optical bundling means, each one of said optical bundling means being operatively related to a given one of said separate receiving regions and being arranged such that the radiation emanating from the individual receiving regions is transmitted to the single radiation receiver, each of the optical bundling means comprising an aspherical surface having two different main radii of curvature, and the radiation receiver is arranged at least approximately at one of the main focal points of the individual surfaces, for generating a pattern of spaced apart substantially strip-like receiving regions, each having a lengthwise extent considerably exceeding the width thereof.

4,058,727

GAMMA CAMERA WITH REFLECTIVITY MASK

Karl J. Stout, Hudson, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 28, 1976, Ser. No. 700,283
Int. Cl.[2] G01T 1/20
U.S. Cl. 250—363 R 8 Claims



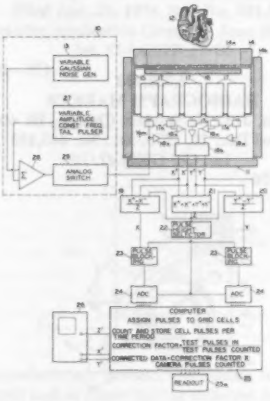
1. A radiographic camera comprising:
a scintillator;
a plurality of photodetectors positioned to face said scintillator;
a plurality of nonreflective mask regions formed upon the front face of said scintillator opposite said photodetectors and positioned coaxially with respective ones of said photodetectors for decreasing the amount of internal reflection of optical photons generated within said scintillator, an individual one of said mask regions being in line with an axis of an individual one of said photodetectors.

4,058,728

CORRECTION OF DATA LOSS IN GAMMA RAY SCINTILLATION CAMERAS

Robert J. Nickles, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 27, 1976, Ser. No. 690,651
Int. Cl.[2] G01T 1/20
U.S. Cl. 250—369 12 Claims



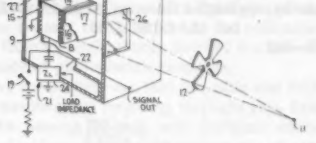
1. Method of correcting for transmission losses in a measurement system employing a plurality sensor of physical phenomena and circuitry for processing signals produced by each sensor indicative of the number and magnitude of occurrences of the phenomena in a given time period, said method comprising:
a. artificially creating a signal having a fixed-frequency of repetition and a shape similar to the shape of the signals produced by the sensors in response to the physical phenomena and in which the amplitudes of the pulses vary in such a fashion as to have amplitudes which fall in the range of amplitudes and having a statistical distribution of amplitudes that is normally produced by said sensors;
b. applying said artificial signal to the processing circuitry in a manner so as to distinguish said artificial signals from normal data signals produced by said sensors;
c. deriving a signal indicative of the ratio of the number of pulses of said artificial signal transmitted by said processing circuitry to the number of said pulses applied to said processing circuit in said given time period.
d. dividing said signals produced by said sensors by said signal indicative of said ratio to produce a data signal corrected for losses occurring in said processing circuit during said given time period.

4,058,729

PYROELECTRIC APPARATUS INCLUDING EFFECTIVELY INTRINSIC SEMICONDUCTOR FOR CONVERTING RADIANT ENERGY INTO ELECTRIC ENERGY

Arden Sher, 108 Charles River Landing Road, Williamsburg, Va. 23185

Continuation-in-part of Ser. No. 632,090, Nov. 14, 1975, abandoned. This application July 30, 1976, Ser. No. 710,296
Int. Cl.[2] G01T 1/24
U.S. Cl. 250—370 30 Claims



1. A device for converting radiant energy into electric energy comprising a capacitor responsive to the radiant energy, said capacitor comprising a layer of an intrinsic semiconductor, first and second insulating layers on the semiconductor layer, first and second metallic contacts respectively on the first and second insulating layers, said contacts, semiconductor layer and insulating layers being such that no junction barrier exists between the contacts; means responsive to the radiant energy for heating the semiconductor to modulate the capacitance between the contacts, and means for connecting a load to be responsive to current derived from the capacitor in response to the capacitance modulation.

4,058,730

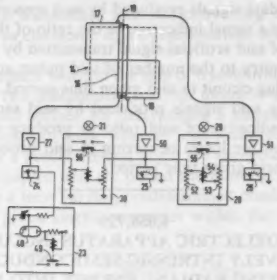
IRRADIATING DEVICE WITH AN ELECTRONIC ACCELERATOR

Rudolf Meyer, Erlangen; Wolf-Eberhard Schiegl, Weisendorf, and Leonhard Taumann, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation-in-part of Ser. No. 506,327, Sept. 12, 1974, abandoned. This application Mar. 12, 1976, Ser. No. 666,233
Int. Cl.[2] G01T 1/29
U.S. Cl. 250—397 9 Claims

1. An irradiating device, comprising an electronic accelerator, an actuating and monitoring device, means for widening the electron beam and homogenizing the electron density thereof, a collimator adjacent said means for laterally limiting the electron beam, a measuring device positioned in the beam direction behind said means and connected with said actuating and monitoring device, said measuring device comprising a plurality of radiation detector means for detecting and indicating an insufficient widening and homogenization of the electron beam to thereby increase the operational safety of the

irradiating device, one of said radiation detector means being disposed within the angular space range of the unscattered

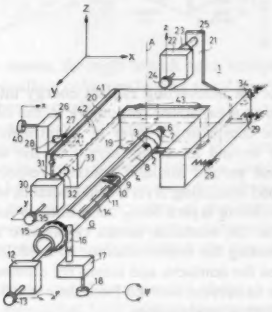


electron beam for measuring the electron beam solely within said range.

4,058,731
SPECIMEN HOLDER FOR A CORPUSCULAR-BEAM APPARATUS

Karl-Heinz Müller; Walter Munchmeyer; Moriz von Rauch, and Norbert Schafer, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 9, 1976, Ser. No. 721,692
Claims priority, application Germany, Sept. 19, 1975, 2542360
Int. Cl.[2] G21K *5/06*
U.S. Cl. 250—442 6 Claims



1. In a corpuscular-beam apparatus including a specimen holder having at least two degrees of freedom of translation and at least one degree of freedom of rotation, and control means for correcting the translational coordinates of the specimen holder automatically when the specimen holder is rotated and retaining a predetermined specimen point in its position in the apparatus, the improvement comprising said control means comprising,

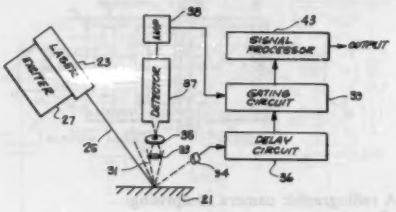
means for controlling the rotational movement of said specimen holder stepwise in angular increments, said angular increments being chosen small so that the translational movement of the specimen point for each angular increment may be considered linear, and

means for correcting the translational coordinates of the specimen holder stepwise in linear increments prior to each stepwise rotation of said specimen holder, each of said linear increments comprising a linear function of the instantaneous values of said translational coordinates and of said angular increments of said rotational movement of said specimen holder.

4,058,732
METHOD AND APPARATUS FOR IMPROVED ANALYTICAL FLUORESCENT SPECTROSCOPY

Irwin Wieder, Los Altos, Calif., assignor to Analytical Radiation Corporation, Los Altos, Calif.

Filed June 30, 1975, Ser. No. 591,305
Int. Cl.[2] G01N *21/38*
U.S. Cl. 250—461 B 25 Claims



1. A method for fluorescent spectroscopy of a target substance comprising:

isolating a target substance,

tagging said target substance with a fluorescent tag having a long fluorescent decay lifetime compared to the longest of the decay lifetimes of competing untagged ambient substances,

removing excess fluorescent tag,

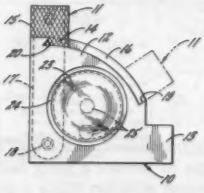
exciting the tagged target substance with at least one pulse of radiation, said pulse having a pulse duration which is short compared to the fluorescent decay lifetime of said fluorescent tag,

detecting the fluorescence of said excited tagged target substances after the fluorescence of said ambient substances has substantially decayed.

4,058,733
RADIOGRAPH MARKER

Oren G. Stembel, 3132 N. Natchez, Chicago, Ill. 60634

Filed Dec. 22, 1975, Ser. No. 643,183
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—476 15 Claims



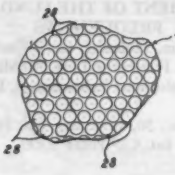
1. A radiograph marker comprising a pair of elements made of a relatively X-ray opaque material and interconnected in a manner to permit relative movement between the two elements, said elements being shaped to form a first letter when in a first position relative to each other and to form a second letter when in a second position relative to each other whereby the same marker can be used to form either of two different letters when placed between an X-ray source and a radiograph film, and gravity responsive means within one of said elements for indicating whether the marker is in a horizontal or vertical position.

4,058,734

PASSIVE INFRARED RESOLUTION TARGET

Leo O. Vroombout, Greene County, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 19, 1976, Ser. No. 706,317
Int. Cl.² G01J 1/00
U.S. Cl. 250—495 3 Claims



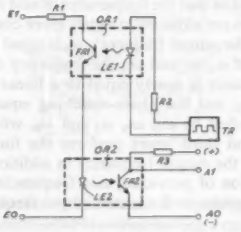
1. A passive resolution target array for testing of infrared reconnaissance sets in an area having a substantially normal scene average temperature, comprising: a background pad of heat retaining material; said background pad including means, responsive to solar radiation for providing a pad temperature greater than the scene average temperature; a plurality of perforated aluminum sheets with between 50 and 80 percent open area positioned on said pad in a conventional resolution measurement target configuration.

4,058,735

OPTO-ELECTRONIC CONTACT MECHANISM

Franz Tippner, Braunschweig, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 29, 1976, Ser. No. 681,514
Claims priority, application Germany, June 20, 1975, 2527520
Int. Cl.² G02B 27/00
U.S. Cl. 250—551 8 Claims



1. An opto-electronic contact mechanism for coupling between an input and an ouput having different operating potentials comprising:

a. first and second optocoupler means each having a radiation transmitter and a radiation receiver;

b. an input circuit for a direct current electrical signal comprised of the radiation receiver of the first optocoupler connected in series with the radiation transmitter of the second optocoupler;

c. an output circuit comprised of the radiation receiver of the second optocoupler; and

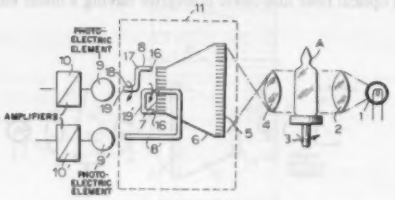
d. a timing generator connected to the radiation transmitter of the first optocoupler for producing a time-varying radiation from said optocoupler radiation transmitter.

4,058,736

METHOD AND APPARATUS FOR INSPECTING EXTRANEOUS SOLID SUBSTANCES CONTAINED IN LIQUID

Toshio Takahashi, Honjo; Toshiyasu Ehara, Misato; Ryosaku Tagaya, and Mikio Tagaya, both of Isezaki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1976, Ser. No. 669,959
Claims priority, application Japan, Mar. 25, 1975, 50-34897
Int. Cl.² G01N 21/26
U.S. Cl. 250—573 8 Claims



5. An apparatus for determining the presence of extraneous solid substances in a liquid in a transparent container, said apparatus comprising:

a rotatable turntable means for supporting and rotating said container thereon;

a light source adjacent said turntable means and said container thereon for projecting light rays toward said container;

a condenser lens between said light source and said container on said turntable means for collimating the light rays from said light source directed toward said container;

a plurality of photoelectric members;

scanning means between said turntable and said photoelectric members for receiving the light rays from said light source passing through said container unobstructed by any of said extraneous solid substances and optically transferring said light rays to said photoelectric members, said scanning means comprised of:

an optical fiber line-circle converter means, the line portion thereof adjacent said container, for receiving said light rays travelling through said container, and

a plurality of rotating scan heads of optical transfer material rotatable about the circle end of said converter, said scan heads having shaft portions coaxially aligned with the longitudinal axial center of the circle end of said converter, and said scan heads being optically connected to said photoelectric members;

focusing lens means between said container and the line end of said converter for focusing the light rays passing through said container onto the line end of said converter; and

amplifying means connected to said photoelectric members for amplifying the output from said photoelectric members.

4,058,737

METHOD AND APPARATUS FOR DETECTING EXTRANEOUS SOLID SUBSTANCES CONTAINED IN LIQUID

Toshio Takahashi, Honjo; Toshiyasu Ehara, Misato; Ryosaku Tagaya, and Mikio Tagaya, both of Isezaki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1976, Ser. No. 669,958
Claims priority, application Japan, Mar. 25, 1975, 50-34898
Int. Cl.² G01N 21/26
U.S. Cl. 250—573 9 Claims

5. An apparatus for determining the presence of an extraneous solid substance which may exist in a transparent liquid contained in a clear container, said apparatus comprising:

a light source;

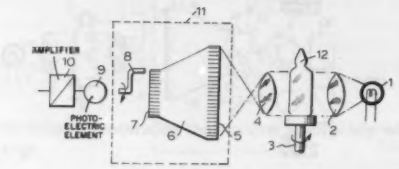
rotatable turntable means adjacent said light source for supporting and rotating said container thereon;

first lens means between said light source and said container on said turntable for collimating the light rays from said light source toward said container;

a photoelectric member;

scanning means between said photoelectric member and said container for receiving the light rays passing through said container which are not blocked by said solid substances in said liquid, said scanning means being optically connected to said photoelectric member and comprised of:

an optical fiber line-circle converter having a linear end of a



plurality of parallel, straight linear files of optical fiber directed toward said container and a circular end formed into a single circle from said fibers at the end of said fibers opposite said linear end, and

a rotating scan head means at the circular end of said converter for scanning said fibers, said scan head means being optically connected to said photoelectric member;

an amplifier connected to said photoelectric member; and

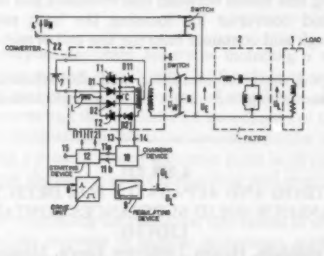
a focusing lens means between said container and the linear end of said converter for focusing the light rays passing through said container onto said linear end of said optical fiber converter.

4,058,738

METHOD AND CIRCUIT ARRANGEMENT FOR STARTING UP A CONVERTER HAVING FORCED COMMUTATION WITH THE CORRECT PHASE

Janos Udvardi-Lakos, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 26, 1975, Ser. No. 617,157
Claims priority, application Germany, Sept. 27, 1974, 2446335
Int. Cl.[2] H02J 9/06
U.S. Cl. 307—66 **22 Claims**



14. A method for starting up with correct phase a converter having forced commutation, said converter including a power stage having controlled main valves and commutation devices associated therewith and said converter further including a control apparatus for controlling a drive unit for generating firing pulses and being adapted to be responsive to a regulating device, said method comprising the steps of:

in stand-by position; charging at least one energy storage device with an amount of energy required for commutation;

in stand-by position; blocking said firing pulses via said control apparatus which is continuously running;

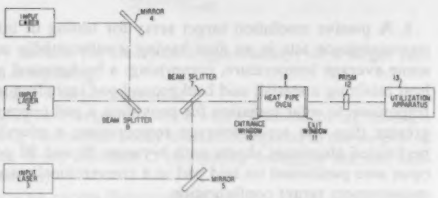
and, upon a starting command, making available the stored amount of energy for commutating and releasing said firing pulses.

4,058,739

METHOD AND APPARATUS FOR PHASE MATCHING BY ADJUSTMENT OF THE FUNDAMENTAL FREQUENCIES

John Ernst Bjorkholm, Holmdel; Gary Carl Bjorklund, West Windsor, and Paul Foo-Hung Liao, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 30, 1976, Ser. No. 746,161
Int. Cl.[2] H03F 7/00
U.S. Cl. 307—88.3 **8 Claims**



1. An apparatus for generating an output frequency ω_4 comprising:

first, second, and third lasers for generating input beams having frequencies ω_1, ω_2, and ω_3, respectively, the extremes of which frequencies define a frequency range,

an interaction medium having at least one two-photon resonance coupled to the ground state of said interaction medium and at least one strong one-photon resonance coupled to the ground state of said interaction medium, the frequency of which one-photon resonance is within said frequency range,

means for directing said beams of said first, second and third lasers substantially collinearly onto said interaction medium, and

means for extracting said output frequency ω_4 from said interaction medium,

characterized in that the frequencies of said first, second, and third lasers are adjusted to satisfy three conditions simultaneously: the output frequency ω_4 is equal to a linear combination of ω_1, ω_2 and ω_3; the frequency of said two-photon resonance is nearly equal to a linear combination of ω_1 and ω_2; and the phase-matching equation is substantially satisfied by ω_1, ω_2, ω_3 and ω_4, whereby said first, second and third lasers perform the function of phase-matching the output frequency in addition to performing the function of providing said frequencies ω_1, ω_2 and ω_3 which combine to form said output frequency.

4,058,740

ENTRY-CONTROLLED ENERGY SYSTEM

James H. Dalton, Nashville; S. Dalton Stover, Adamsville, both of Tenn., and Robert M. Roney, Huntsville, Ala., assignors to Lok-A-Wat, Inc., Adamsville, Tenn.

Filed Mar. 12, 1975, Ser. No. 557,797
Int. Cl.[2] G08B 21/00
U.S. Cl. 307—116 **8 Claims**

8. In a room having a door to open and close an opening thereto and a lock accessible from inside said room and operable to lock and unlock said door in closed condition,

a. load circuit means for an electrically energized device in said room,

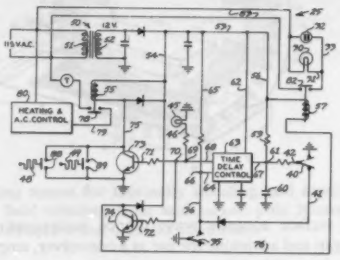
b. switch means operable to open and close the load circuit means, and

c. control system means for operating said switch, comprising

c-1. a first circuit control means operated in response to open and closed conditions of said door,

c-2. a second circuit control means operated in response to door locking and door unlocking condition of said lock, and

c-3. circuit means operated by said first and second circuit



control means for closing said switch means in response to either a door open condition or a door locked condition,

c-3′. said circuit means including time delay means operated jointly by said first and second circuit control means to open said switch means after a predetermined interval during which both said door is in closed condition and said lock is in door unlocking condition.

4,058,741

SEMICONDUCTOR SWITCH CIRCUIT

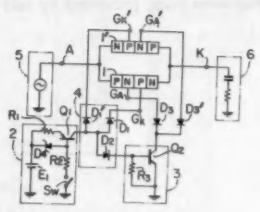
Michio Tokunaga, Zushi; Ichiro Ohhinata, Yokohama, and Shinzi Okuhara, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Japan

Filed July 13, 1976, Ser. No. 704,981

Claims priority, application Japan, July 14, 1975, 50-85388

Int. Cl.² H03K *17/72*

U.S. Cl. 307—252 G **7 Claims**



1. A semiconductor switch circuit comprising:

at least a 4-terminal PNPN switch having a cathode gate and an anode gate;

first drive circuit means for feeding a current into the cathode gate of said PNPN switch;

second drive circuit means for taking out a current from the anode gate of said PNPN switch, selected one of said first drive circuit means and said second drive circuit means having a power supply; and

change-over means, connected between said first drive circuit means and said second drive circuit means, for selecting a path of a drive current from said drive circuit means with said power supply to either selected one of the cathode gate and the anode gate of said PNPN switch or said drive circuit means without said power supply in response to a potential of one of the cathode gate and anode gate of said PNPN switch.

4,058,742

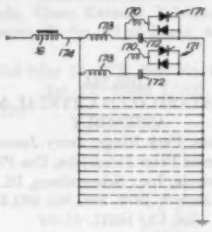
RADIO FREQUENCY PULSE TRANSMITTERS

William Joseph O'Brien, London, England, assignor to Decca Record Company Ltd., London, England

Continuation of Ser. No. 502,944, Sept. 4, 1974, abandoned. This application July 19, 1976, Ser. No. 706,271

Int. Cl.² H03K *1/16, 17/72, 3/02*

U.S. Cl. 307—260 **33 Claims**



1. A radio frequency power output device comprising a primary inductance unit including a coil formed of a plurality of similar adjacent windings inductively coupled to constitute a single primary inductance unit, a plurality of solid state current control units, means connecting each control unit directly to the ends of a respective associated winding, the current control units being located adjacent the respective windings with said connecting means disposed in pairs adjacent one another to cancel the fluxes produced by the currents in said connecting means, timing means arranged for operating said current control units simultaneously, capacitor means coupled to each of said adjacent windings by a respective current control unit to make said primary inductance unit resonant at a predetermined frequency when the control units are conductive, and a radio frequency power output circuit including a secondary winding coupled to all the windings of said primary inductance unit and tuned to said predetermined frequency.

4,058,743

PULSE GENERATING CIRCUIT

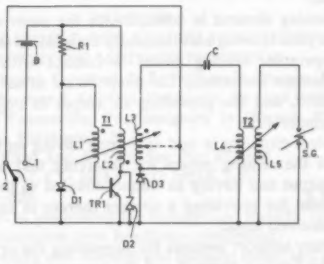
Desmond Ross Armstrong, Kidlington, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1975, Ser. No. 558,017

Claims priority, application United Kingdom, Mar. 29, 1974, 13996/74

Int. Cl.² H03K *17/00*

U.S. Cl. 307—275 **13 Claims**



1. A pulse generating circuit comprising a first transformer having a primary winding connected in an oscillator circuit and a secondary winding connected with a diode to a capacitor to provide a charge path for the capacitor, a switch, means connecting the capacitor with the primary winding of a second transformer, and circuit means including at least a part of the secondary winding of the first transformer, the switch and the

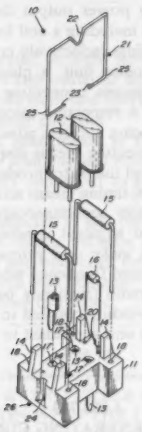
primary winding of the second transformer for providing a discharge path for the capacitor such that operation of the switch results in a pulse being generated through a secondary winding of the second transformer upon discharge of the capacitor.

4,058,744

THERMALLY STABILIZED CRYSTAL MOUNTING ASSEMBLY

Arnold Vincent Dano, Park Ridge; Jerry James Tomaszewski, Addison, and Jerome Peter Friedrichs, Des Plaines, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed June 7, 1976, Ser. No. 693,470
Int. Cl.[2] H01L *41/04*
U.S. Cl. 310—343 **11 Claims**



1. A crystal stabilizing assembly for electronic apparatus comprising:

a frequency controlling crystal coupled to a portion of the circuitry of the electronic apparatus for controlling the frequency of said portion;

a hermetically sealed crystal housing for retaining the crystal;

a heating element in contact with the outer surface of the crystal housing and thermally coupled to said housing;

temperature sensing means in contact with said heating element for sensing the temperature of said heating element, and for providing an output in response to said temperature;

control circuitry in said apparatus having an input coupled to the sensing means for receiving said sensing means output and having an output coupled to the heating element for providing a current thereto in response to the received input;

unitary support member for supporting the crystal housing, the heating element and the temperature sensing means; and

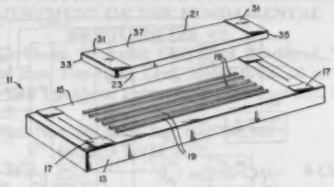
spring clip means mounted on the support member and having a first position for biasing the heating element against the crystal housing and for retaining the housing on the support member, and having a second position wherein the clip means is pivotable to allow release of the crystal housing from the support member.

4,058,745

CONTROLLED GAP SURFACE ACOUSTIC WAVE DEVICE

Oberdan W. Otto, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed July 6, 1976, Ser. No. 702,570
Int. Cl.[2] H01L *41/04*
U.S. Cl. 310—366 **9 Claims**



1. A surface acoustic wave device incorporating a controlled gap and adaptable for use as a convolver, amplifier, and the like, comprising:

a substrate of piezoelectric material having a polished upper surface capable of propagating surface acoustic wave energy;

transducer means including a pair of spaced electro-acoustic transducers disposed on said substrate for defining a propagation beam path between said transducers;

a semiconductor slab having a lower polished planar surface and an upper planar surface at least partially in contact with a conductive electrode;

support means including a plurality of parallel, spaced elongated rails disposed on said propagation beam path between said transducers and having longitudinal axes aligned with said propagation beam path for separating said upper and lower planar surfaces a predetermined distance to couple surface acoustic wave energy propagating in said beam path to said slab; and

pressure means coupled to said slab and to said substrate for exerting a uniform compressional force thereto forcing said planar surfaces toward each other while contact therebetween being prevented by said rails.

4,058,746

DYNAMOELECTRIC MACHINERY UTILIZING SUPERCONDUCTIVE WINDINGS

Cecil J. Mole, Monroeville, and Robert F. Edwards, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

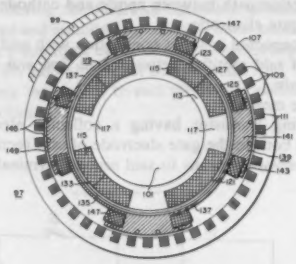
Continuation of Ser. No. 327,540, Jan. 29, 1973, now Defensive Publication No. T917,006. This application July 17, 1975, Ser. No. 596,775
Int. Cl.[2] H02K *9/00*
U.S. Cl. 310—10 **38 Claims**

1. In a dynamoelectric machine having a stator and a rotor, an improved field arrangement comprising:

a superconductive field winding to produce magnetic flux;

a salient pole ferromagnetic field structure formed to assist in

distributing the magnetic flux produced by said superconductive field winding; and



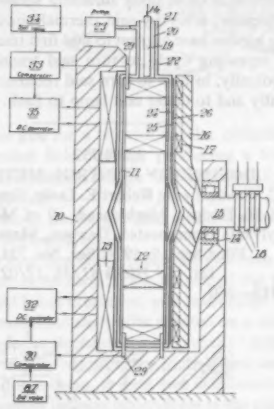
insulating means for thermally isolating said superconductive field winding from said salient pole ferromagnetic field structure and ambient conditions.

4,058,747

ROTARY ELECTRICAL MACHINES HAVING A SUPERCONDUCTING FIELD WINDING

Alain Mailfert, Morsang-sur-Orge, and Lionel Boyer, Alfortville, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Apr. 13, 1976, Ser. No. 676,405
Claims priority, application France, Apr. 17, 1975, 75.11953
Int. Cl.[2] H02K *9/00*
U.S. Cl. 310—52 **9 Claims**



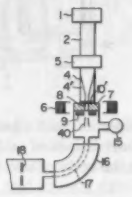
1. A synchronous rotary electric machine having, in combination: a stationary frame; a super-conducting field winding located in a cryostat enclosure, having an axis and carried by said frame against relative movement thereof with respect to said frame along said axis, said field winding being constructed to deliver a magnetic field having *n* pairs of poles, *n* being an integer, when DC currents circulate therein; a mechanical torque transmission shaft rotatable with respect to said frame about said axis; a normally conducting polyphase winding for providing a rotating field having *n* pairs of poles when AC currents circulate therein, said polyphase winding being carried by said shaft, being located in side by side relation with respect to said superconducting field winding, and being connected to sliding external contacts for exchanging electrical power with an external AC circuit; auxiliary DC windings securely connected to said frame in side by side relation with said field winding, said auxiliary DC windings being constructed to deliver a magnetic field having *n* pairs of poles when DC currents circulate therein; and means for adjusting the currents in said auxiliary windings at a value for which both the torque and axial forces tending to move said field winding with respect to said frame are lower than a predetermined value.

4,058,748

MICROWAVE DISCHARGE ION SOURCE

Noriyuki Sakudo, Ome; Katsumi Tokiguchi, Kokubunji, and Ichiro Kanomata, Fuchu, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 13, 1976, Ser. No. 686,121
Int. Cl.[2] H01J *27/00*
U.S. Cl. 313—156 **13 Claims**



1. A microwave discharge ion source comprising a set of conductive members for producing a microwave electric field therebetween, means for generating a magnetic field in a direction perpendicular to said microwave electric field, means for introducing a sample gas or vapor, at least one extraction electrode for taking ions out of a plasma produced by a microwave discharge which occurs in the atmosphere of the introduced sample gas or vapor in cooperation with said microwave electric field and said magnetic field, and a vacuum-sealing insulator provided at an end portion opposite to the end portion at which said extraction electrode is provided, wherein said set of conductive members are a set of electrodes having their surfaces arranged in opposing and substantially parallel relationship; a discharge space defined in the proximity of an electrode gap between said electrodes has a cross section substantially rectangular in a plane perpendicular to a direction along which the ions are extracted; said extraction electrode is provided with a slit having substantially the same pattern as that of said rectangular cross section, an ion beam having a rectangular cross section being extracted through said slit; and said vacuum-sealing insulator is made of a conductor material at a position at which it comes into contact with said electrodes, said conductor material being vacuum-tightly attached to said vacuum-sealing insulator.

4,058,749

FILAMENT SHIELD FOR SEALED HEADLAMP AND MOUNTING METHOD THEREFOR

Nickolas P. Demas, Cranford, N.J.; William E. Duncan, Boyertown, Pa.; Norman S. Gephart, Pottstown, Pa., and William T. S. Waltz, Wescosville, Pa., assignors to Wagner Electric Corporation, Parsippany, N.J.

Filed Apr. 5, 1976, Ser. No. 673,400
Int. Cl.[2] H01J *1/00*; H01K *1/02*
U.S. Cl. 313—326 **6 Claims**

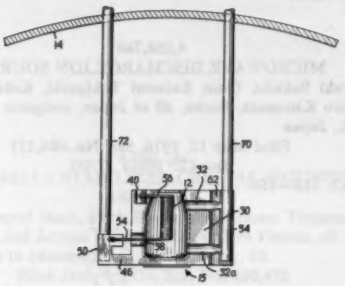
1. A method of assembling the filament and metallic filament shield in a automotive type headlamp comprising:

a. preassembling said filament and filament shield into a rigid subassembly, said filament being welded at each of its two mounting legs to said filament shield whereby an electrical short circuit is formed through said metallic filament shield between the ends of said filament; then

b. welding said subassembly to support pins in a reflector of said headlamp, said support pins also being adapted to providing electrical connection to said filament; and then

c. cutting away the connecting metal between

i. a portion of said filament shield to which one of said support pins and one end of said filament are welded and



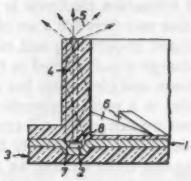
ii. the remainder of said filament shield, whereby the electrical short circuit of said filament previously existing through the body of said filament shield is removed.

4,058,750

LIGHT EMITTING SEMICONDUCTOR INDICATING STRUCTURE WITH LIGHT CONDUCTORS

Werner Schöberl, Massenbachhausen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Sept. 20, 1976, Ser. No. 725,083
Claims priority, application Germany, Sept. 20, 1975, 2542095
Int. Cl.² H05B *33/02, 33/20*
U.S. Cl. 313—500 **19 Claims**



19. A semiconductor arrangement for producing illuminated characters comprising: a structured contact strip; a plurality of liminescent semiconductor elements mounted on the strip for electrical connection therewith by first electrodes; means connecting second electrodes of said semiconductor elements to another part of said strip; a homogeneous plastic material embedding said contact strip and said semiconductor elements, but leaving outer connecting parts protruding, and forming a common base plate and a separate light conductor above each said semiconductor element, with each said light conductor extending substantially perpendicular to said base plate; and a casing hood surrounding said base plate and said light conductors, said casing hood having a plurality of inner webs which extend perpendicular to said base plate between said light conductors to screen same from one another.

4,058,751

LIGHT FLASHER CIRCUIT INCLUDING GTO

Ronald Robert Brooks, Hamilton Square, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 23, 1976, Ser. No. 651,918
Int. Cl.² H05B *39/09;* G08B *5/38;* H03K *3/02*
U.S. Cl. 315—200 A **13 Claims**

1. A light flasher circuit comprising:

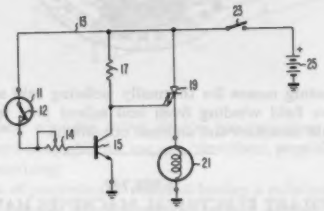
first and second terminals across which a direct current operating potential may be applied;

a gate-turn-off silicon controlled rectifier having a main conduction path between anode and cathode electrodes, and a gate electrode;

a lamp connected in series connection with said conduction path of said rectifier between said first and said second terminals;

resistance means;

a switching transistor having a collector electrode connected both to the gate electrode of said rectifier and via said resistance means to said second terminal, having an



emitter electrode coupled to said first terminal, and having a base electrode; and

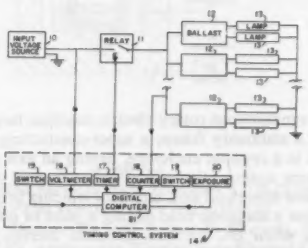
a thermal circuit breaker having a pair of normally-closed mechanical contacts, connected respectively to the base electrode of said transistor and to said second terminal, which said contacts open when the current flowing through them sufficiently heats the breaker and which said contacts close upon sufficient subsequent cooling of said breaker, whereby said thermal circuit breaker selectively applies base current to said first transistor according to a repeating cycle to turn said transistor on and off periodically, in turn to turn said rectifier off and on periodically and to cause said lamp to flash.

4,058,752

DOSIMETRY CONTROL METHOD

William C. Woods, Lynn; Robert E. Levin, South Hamilton, and Richard H. Hodges, Marblehead, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Sept. 9, 1976, Ser. No. 721,918
Int. Cl.² H05B *41/36, 37/02*
U.S. Cl. 315—360 **1 Claim**



1. The method of operating a photochemotherapy chamber for the irradiation of a patient with long wave ultraviolet light comprising the steps of:

1. selecting a prescribed dosage of long wave ultraviolet radiation;

2. automatically converting said prescribed dosage into the time duration that an ultraviolet source should be energized to deliver said dosage by

a. monitoring the line voltage delivered to said ultraviolet

source and establishing said time duration in accordance with the deviation of said line voltage from a predetermined value and

b. monitoring the hours of operation of said ultraviolet source and establishing said time duration in accordance with a nonlinear curve of output versus hours of operation for said ultraviolet source; and

3. exposing the patient to said ultraviolet radiation for said time duration.

4,058,753

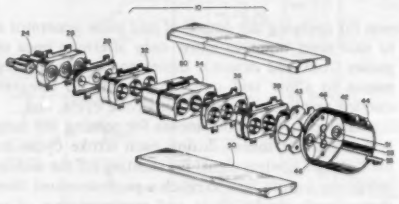
ELECTRON GUN HAVING AN EXTENDED FIELD BEAM FOCUSING AND CONVERGING LENS

Allen P. Blacker, Hoffman Estates, and James W. Schwartz, Deerfield, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 494,123, Aug. 2, 1974, Pat. No. 3,995,194. This application Mar. 15, 1976, Ser. No. 666,858

Int. Cl.² H01J *29/70, 29/76*

U.S. Cl. 315—368 **11 Claims**



1. An electron gun for a television color cathode ray tube having an extended field lens for producing a focused and diverted beam of electrons, said gun having coaxially arranged electrodes comprising:

associated cathode means and grid means for producing an electron beam crossover;

a main focus lens means for receiving electrons from said beam crossover to form at the screen of the tube a real image of said beam crossover, said main focus lens means having at least three electrodes situated on a common axis including a focus electrode for receiving a variable potential for electrically adjusting the focus of said beam, and in succession down-beam, at least two associated electrodes having potentials thereon which form in the gaps between adjacent electrodes significant main focus field components, the strength of a first of which components is controlled by adjustment of the voltage received by said focus electrode, the strength of a second of which field components spaced down-beam from said first component being relatively less than that of said first component;

said lens means being characterized by having addressing faces on said associated electrodes which define said second field component being so structured and disposed as to cause said second field component to be asymmetrical and effective to significantly divert said beam from its path, whereby due to the relative weakness of said second field component and the separation of said second field component from said first field component, said diverting of said beam is accomplished without any significant distortion of the beam and substantially independently of any beam-focusing adjustments of said first field component.

4,058,754

MALFUNCTION INDICATION APPARATUS FOR USE IN A CRT DEFLECTION CIRCUIT

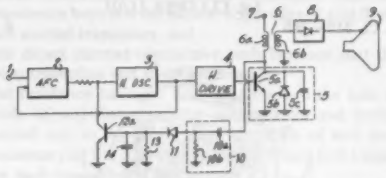
Toshinobu Ohnishi, Yokohama; Hiroyuki Sumiya, Fussa, and Masao Suzuki, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 21, 1976, Ser. No. 688,899

Claims priority, application Japan, June 3, 1975, 50-66910

Int. Cl.² H01J *29/70*

U.S. Cl. 315—411 **12 Claims**



1. Apparatus for detecting an error condition in a deflection circuit of a cathode ray tube, said deflection circuit including means for generating a periodic retrace signal, comprising:

filter means coupled to said retrace signal generating means and normally non-responsive to said retrace signal, said retrace signal having higher frequency components in the event of said error condition and said filter means passing said higher frequency components; and

means coupled to said filter means and responsive to signals passed by said filter means to produce an output signal.

4,058,755

KRAMER SYSTEM UTILIZING A COMMUTATORLESS MOTOR

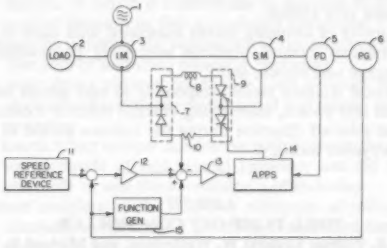
Mitsuyuki Honbu; Sanshiro Obara, both of Hitachi, and Takamasa Hori, Tohkai, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 20, 1976, Ser. No. 650,767

Claims priority, application Japan, Jan. 20, 1975, 50-7804

Int. Cl.² H02P *1/54*

U.S. Cl. 318—47 **9 Claims**



1. A speed control system for an induction motor, comprising an induction motor having a winding providing an output, a load driven by the induction motor, a synchronous motor mechanically connected to the induction motor, converting means responsive to the output of the winding of the induction motor for providing a direct current signal and therefrom an alternating current signal for application to the synchronous motor, the converting means including thyristor means, a current signal generating means supplying a current signal to the gates of the thyristor means of the converting means in accordance with a desired speed value and the actual speed value of the synchronous motor, and function generator means for varying the current signal generated by the current signal generating means to maintain the value of the direct current signal of the converting means less than a maximum commutation current value and greater than a minimum load current

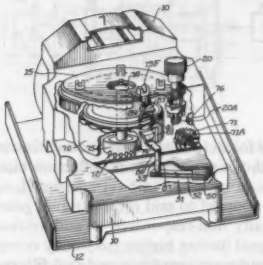
value in accordance with the actual speed value of the synchronous motor.

4,058,756

BIDIRECTIONAL CHANNEL SKIPPING TUNER DRIVE SYSTEM WITH SINGLE POLE PROGRAMMING SWITCH

Richard L. Thorne, Elgin, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 5, 1976, Ser. No. 664,139
Int. Cl.² G05B *11/01*
U.S. Cl. 318—265 **6 Claims**



1. For use in a television tuning system in which a tuner channel selector is rotatable between a plurality of positions each corresponding to a broadcast channel, a tuner drive system including a bidirectional electric motor, means mechanically coupling said motor to said channel selector, initiate means responsive to viewer commands initiating channel selector rotation in a selected direction, carryover means activated by channel selector rotation for continuing said rotation in the selected direction until the next broadcast channel position is reached inactivating said carryover means, and skip means, mechanically coupled to said channel selector operative before said carryover means become inactivated causing said channel selector to pass through selected ones of said plurality of broadcast channel positions without stopping, said skip means comprising:

a single pole switch;

a plurality of camming means associated with each of said broadcast channel positions selectively positionable to engage said switch; and

electrical latching means, responsive to said initiate means and said switch, maintaining channel selector rotation in the selected direction during the inactive period of said carryover means.

4,058,757

WELL PUMP-OFF CONTROLLER

Barry S. Welton; Granval W. Westerman, and Michael E. Hill, all of Midland, Tex., assignors to End Devices, Inc., Midland, Tex.

Filed Apr. 19, 1976, Ser. No. 678,452
Int. Cl.² G05B *5/00*
U.S. Cl. 318—474 **4 Claims**

1. A system for controlling an electric motor employed for driving a walking beam type pumping unit used for pumping fluid from a well wherein the amplitude of the current drawn by the motor normally has two minimum peak values during each stroke cycle of the walking beam, said system comprising:

measuring means for measuring the amplitude of the current drawn by the motor during each stroke cycle of the walking beam,

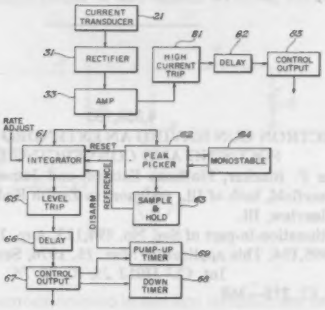
detector means coupled to the output of said measuring means for producing a pulse at the minimum peaks of the current amplitude during each stroke cycle,

integrator means having a first input connected to the output of said measuring means for integrating the current measured by said measuring means during each stroke cycle,

pulse generating means coupled to the output of said detector means and responsive to alternate pulses from said detector means for generating a control pulse during each stroke cycle having a time period greater than ½ of the time period of each stroke cycle,

said integrator means having a reset input,

means for applying the output of said detector means to said reset input,



means for applying the output of said pulse generator means to said reset input to allow only alternate ones of said pulses from said detector means to reset said integrator means to allow said integrator means to integrate the current amplitude during each stroke cycle, and

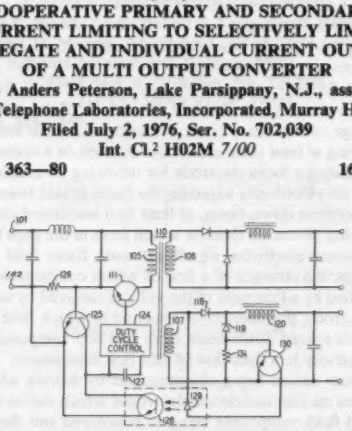
means including threshold means for sensing the output of said integrator means during each stroke cycle and for producing a control signal for shutting off the motor if the integrator output fails to reach a predetermined threshold during each stroke cycle and representative of normal pumping conditions.

4,058,758

COOPERATIVE PRIMARY AND SECONDARY CURRENT LIMITING TO SELECTIVELY LIMIT AGGREGATE AND INDIVIDUAL CURRENT OUTPUTS OF A MULTI OUTPUT CONVERTER

William Anders Peterson, Lake Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 2, 1976, Ser. No. 702,039
Int. Cl.² H02M *7/00*
U.S. Cl. 363—80 **16 Claims**



1. In a converter circuit

an input circuit including switching means and means to control the duty cycle of said switching means, said input circuit including current limit means operative through said means to control to limit maximum current in said input circuit by limiting a duty cycle,

at least a first and a second output circuit, said first output circuit including output current limit means operative

through said means to control to limit maximum current in said first output circuit comprising means to monitor a current in said first output circuit, current threshold responsive means coupled to said means to monitor and responsive to a threshold of current in said first output circuit, a light emitting diode coupled to said threshold responsive means, said light emitting diode being energized in response thereto,

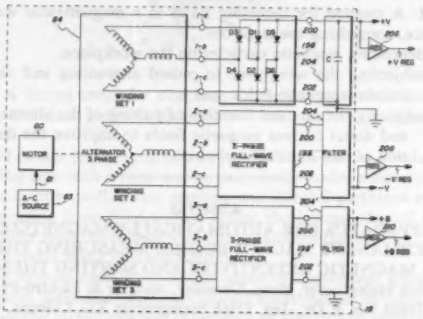
a phototransistor having a base optically coupled to and responsive to said light emitting diode, the output of said phototransistor being coupled to said means to control and being preferentially operative over said current limit means when energized to limit maximum current in said first output circuit by limiting a duty cycle.

4,058,759

POWER SUPPLY FOR COMPUTER PERIPHERAL DEVICE

Martin O. Halfhill, San Jose, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 19, 1975, Ser. No. 633,516
Int. Cl.² H02K *47/00*; H02M *5/32*
U.S. Cl. 322—13 **15 Claims**



1. In a computer peripheral device having a driven element, a controllable element and control means coupled to said controllable element and operative in responsive to a plurality of different power supply voltages for controlling said controllable element, an improved power supply means coupled to said control means for supplying said plurality of power supply voltages to said control means, said power supply means comprising:

a motor capable of being driven at a predetermined rate of speed; said driven element being coupled to and driven by said motor;

means coupled to said motor and responsive to the motor being driven at said predetermined rate of speed for generating said plurality of power supply voltages, said means for generating comprising an alternator coupled to and driven by said motor for generating a plurality of output signals and means for deriving said plurality of power supply voltages from said plurality of output signals; and

means coupled to said means for generating for supplying said plurality of power supply voltages to said control means.

4,058,760

REFERENCE POTENTIAL GENERATORS

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,359
Int. Cl.² G05F *1/58*
U.S. Cl. 323—19 **9 Claims**

6. A reference potential generator in combination with means for utilizing the reference potential it supplies, said reference potential generator comprising:

first and second terminals connected to said means for utilizing the reference potential and a third terminal between which first and third terminals energizing potential is applied;

first and second transistors of a first conductivity type operated at the same absolute temperature T as each other, each of said first and said second transistors having respective base and emitter and collector electrodes;

a direct interconnection without substantial intervening impedance between the emitter electrodes of said first and said second transistors; and

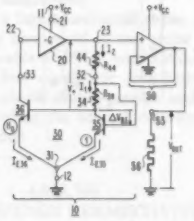
a first direct current conductive path between that direct interconnection and said first terminal;

a first resistance having a first end to which the base electrode of said first transistor is connected and having a second end to which the base electrode of said second transistor and the collector electrode of said first transistor are each connected;

a second direct current conductive path between the first end of said first resistance and said first terminal;

further resistance included in at least one of said first and said second direct current conductive paths;

third and fourth transistors of a second conductivity type complementary to said first conductivity type, each of said third and said fourth transistors having first and second and control electrodes and having a principal conduction path between its first and second electrodes the conduction of which is controllable in response to potential applied between its first and control electrodes;



means for adjusting the conduction of the principal conduction path of said third transistor, including

a third direct current conductive path between the first electrode of said third transistor and said second terminal, including

a fourth direct current conductive path between the collector electrode of said second transistor and the second electrode of said third transistor, and including

direct coupling of the collector electrode of said second transistor to the control electrode of said third transistor; and

means for conditioning said fourth transistor for conduction through its principal conduction path which is proportional to the conduction of said third transistor through its principal conduction path, including

means for applying a potential to the control electrode of said fourth transistor equal to that at the control electrode of said third transistor, including

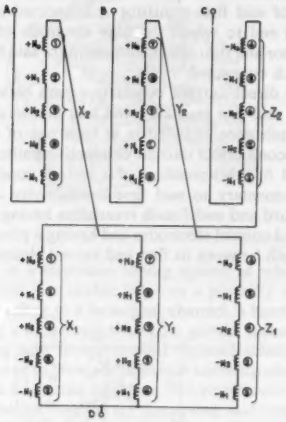
a fifth direct current conductive path between the first electrode of said fourth transistor and said second terminal, and including

a sixth direct current conductive path between the second electrode of said fourth transistor and said third terminal, said reference potential being developed between said first and said second terminals responsive to application of an energizing potential between said first and said third terminals.

4,058,761
SATURATED REACTORS

Erich Siegfried Friedlander, Birmingham, England, assignor to Associated Electrical Industries Limited, London, England

Filed May 4, 1976, Ser. No. 683,089
Claims priority, application United Kingdom, May 13, 1975, 20110/75
Int. Cl.[2] G05F 3/06
U.S. Cl. 323—48 10 Claims



1. A saturated reactor arrangement having three line-terminals and a star-point, for providing a reactive load with negligible zero-sequence reactance and the capability of earthing said star-point without reducing harmonic compensation, said reactor arrangement being of the kind comprising:

A. a core structure having *n* core-limbs,

I. where *n* is at least five,

II. said *n* core-limbs being in *p* groups where *p* is at least one and where *n/p* is an integer,

B. each of said *p* groups having primary windings connected between said three line-terminals and said star-point,

I. the primary windings of each group being connected in series with the primary windings of each other group if any, and in such manner that fluxes in said core-limbs have phases spaced regularly throughout each half cycle for effecting harmonic current cancellation,

C. the reactor arrangement further comprising a secondary winding on each of said *n* core-limbs,

I. each said secondary winding being interconnected with each other secondary winding to form at least one mesh circuit, wherein the improvement comprises:

D. constituting the primary windings of

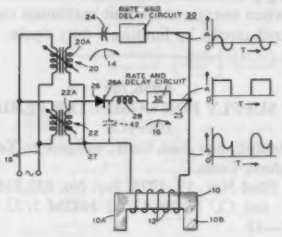
I. one set of two duplicate sets of primary winding components having said core structure in common,

II. said two duplicate sets being connected in zig-zag star connection between said three line-terminals and said star-point to prevent any net magnetization of said core-limbs by zero-sequence current.

4,058,762
METHOD AND APPARATUS FOR MAGNETIC INSPECTION THROUGH ADJUSTABLE PULSED ALTERNATING AND DIRECT CURRENT MAGNETIC FIELDS

Amos Earl Holt; William Eugene Lawrie, both of Lynchburg, Va., and Albert Stingel Birks, Doylestown, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed June 4, 1976, Ser. No. 693,021
Int. Cl.[2] G01R 33/12
U.S. Cl. 324—216 5 Claims



1. A method for detecting flaws in a magnetizable workpiece, comprising the steps of:

depositing magnetic particles on the workpiece,

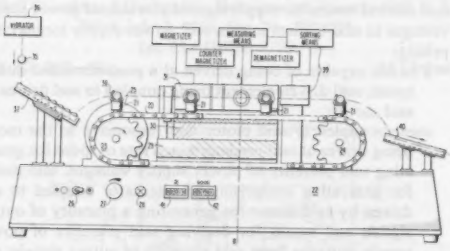
subjecting the workpiece to pulsed alternating and direct current magnetic fields, and

adjusting the rate and duration of pulsing of the alternating and direct current magnetic fields to improve the detection of flaws in the workpiece.

4,058,763
APPARATUS FOR AUTOMATICALLY MAGNETIZING PERMANENT MAGNET BODIES, MEASURING THEIR MAGNETIC RETENTIVITY AND SORTING THEM

Erich Steingroever, Bonn, Germany, assignor to Elektro-Physik Hans Nix & Dr. -Ing. Erich Steingroever KG, Cologne, Germany

Filed Mar. 6, 1975, Ser. No. 555,899
Claims priority, application Germany, Mar. 11, 1974, 2411485
Int. Cl.[2] G01R 33/12
U.S. Cl. 324—205 27 Claims



1. In apparatus for automatically testing and selecting permanent magnet bodies having oppositely facing pole surfaces, the combination comprising generally U-shaped ferromagnetic yoke means having opposed inner pole surfaces defining an elongated air gap of uniform width within which gap magnet bodies may be received, circuit means for said yoke means including means for generating a magnetizing flux through a magnet body at at least one position along the length of said air gap and including means for measuring a magnetic value of said magnetized magnet body at another position along the length of said air gap, said circuit means also including comparison means responsive to said measuring means for selecting

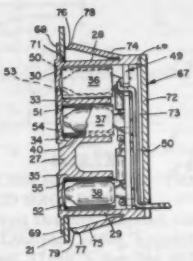
magnet bodies having predetermined values of said measured magnetic characteristic, and conveyor means for moving a magnet body successively to said one position and to said measuring position.

4,058,764

COMBINED PILOT LIGHT AND GROUND TESTING ASSEMBLY

Francis D. Kirchoff, Waban, Mass., assignor to Alco Electronic Products, Inc., North Andover, Mass.

Filed July 8, 1976, Ser. No. 703,575
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—51 **4 Claims**



1. A circuit tester for checking a standard grounded three wire electrical outlet to determine if said outlet is properly wired:

said circuit tester being of the type having a hollow, insulating case with a front wall, a pair of side walls, a top wall, a bottom wall, a rear opening and integral partitions extending from front to rear across the interior thereof to form three rectilinearly aligned chambers therewithin;

said tester being characterized by:

said hollow case being of one piece of translucent plastic with three said partitions spaced apart therein to form a pair of juxtaposed said chambers and a third said chamber at a spaced distance therefrom;

said partitions being of less depth than the depth of the said walls of said case to provide a circuit board compartment at the rear of said case;

a circuit board located in said circuit board compartment, said board supporting a pair of juxtaposed lamps, and a third lamp spaced apart therefrom, each said lamp being enclosed within one of said chambers and electrically connected, through said circuit board to a three prong connection in said outlet;

a sleeve of opaque material lining each said chamber to light shield one said chamber from another;

and a rear wall forming a closure to the rear opening of said case.

4,058,765

GENERAL DISPLACEMENT SENSOR

David Richardson, 2588 Knights Bridge Lane, Santa Clara, Calif. 95051, and Paul Kageyama, 418 Madera No. 1, Sunnyvale, Calif. 94086

Filed June 7, 1976, Ser. No. 693,886
Int. Cl.[2] G01R *27/26*
U.S. Cl. 324—61 R **40 Claims**

1. Apparatus for sensing level of pourable material in a container, the apparatus comprising:

pulse generation means for producing a sequence of voltage pulses, spaced in time, of substantially identical magnitude and duration;

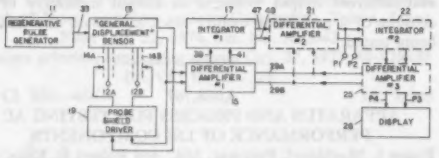
resistive-capacitive circuit means, operatively associated with the pulse generation means, and having a probe which includes at least one probe capacitor immersed in the pourable material, for producing a signal indicative of level of pourable material in the container;

second resistive-capacitive circuit means, operatively associated with the pulse generation means, for producing a reference signal indicative of a reference level in the container;

amplification means for amplifying the pourable material level signal and the reference signal, producing an amplified pourable material level signal and an amplified reference signal;

integration means for generating a time-integrated difference signal of the amplified pourable material level signal and the amplified reference signal;

output means, operatively associated with the integration



means, for producing an output signal proportional to a mathematical function of the pourable material level in the container;

shield driver means for reducing the effects of extraneous capacitance developed by the probe of the first resistive-capacitive circuit means, the shield driver being operatively associated with the probe of the first resistive-capacitive circuit means; and

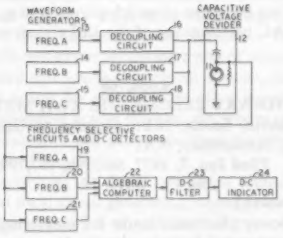
the probe including a three-conductor cable, with one conductor electrically connected to the probe capacitor immersed in the pourable material, with a second conductor surrounding the first conductor and being electrically connected to the shield driver means, and with a third conductor surrounding the second conductor and being electrically grounded.

4,058,766

MULTIPLE-FREQUENCY PERMITTIVITY TESTER

Ronald F. Vogel, Bettendorf, Iowa; Robert R. Boldt, Taylor Ridge, Ill.; Kevin D. McKee, Davenport, Iowa; Roy E. Resh, Bettendorf, Iowa, and Paul E. West, Davenport, Iowa, assignors to Agridustrial Electronics, Inc., Bettendorf, Iowa

Filed June 21, 1976, Ser. No. 697,858
Int. Cl.[2] G01R *27/26*
U.S. Cl. 324—61 R **14 Claims**



1. An electrical testing system having an output that is a function of the permittivity of materials for determining qualities of the materials, comprising: generating means for exciting periodic electrical waves at a plurality of frequencies, said generating means having signal selective circuits for supplying said waves at respective predetermined ones of said frequencies, a capacitive cell to receive materials for testing, the capacitive impedance of said cell being dependent on the complex permittivity of material placed therein, said signal selective circuits of said generating means connected to said capaci-

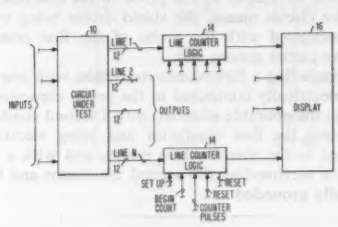
tive cell to apply thereto said periodic electrical waves at said predetermined frequencies, output selective circuits connected to said capacitive cell for receiving voltages developed thereacross, said output selective circuits having different output circuits responsive to application of voltages at different ones of said predetermined frequencies for developing different output voltages therein in response to application thereto of said voltages developed across said capacitive cell, the magnitudes of said different output voltages varying systematically in accordance with different impedances of said cell at different ones of said predetermined frequencies, computing means connected to said output circuits of said output selective circuits, said output circuits applying said different output voltages to said computing means, and said computing means being programmed to provide in response to application thereto of said different output voltages an output indicative of the amount of a particular quality associated with the material being tested.

4,058,767

APPARATUS AND PROCESS FOR TESTING AC PERFORMANCE OF LSI COMPONENTS

Eugen I. Muehldorf, Potomac, Md., and Robert R. Elam, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1975, Ser. No. 572,806
Int. Cl.² G01R *15/12*
U.S. Cl. 324—73 R **11 Claims**



1. A process for testing the AC performance of LSI circuits comprising the steps of

a. providing a test pattern to an LSI circuit under test,

b. sensing a plurality of output signals from the circuit under test by one or more logic elements to translate the plurality of output signals into numerical values indicative of the relative switching performance of the circuit,

c. providing a plurality of different control signals to each logic element, the control signals being correlated with the test pattern to the circuit under test, and

d. displaying the status of each logic element as an indication of the AC performance of the LSI circuit under test.

4,058,768

TWO-WAY ELECTRONIC KWH METER

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 7, 1977, Ser. No. 757,799
Int. Cl.² G01R *11/32*
U.S. Cl. 324—142 **11 Claims**

1. A two-way electronic meter for measuring energy consumed in or exported from an electrical system comprising

means for generating first and second analog signals, said signals being proportional to a current in said system, said first analog signal being 180° out of phase with respect to said second analog signal;

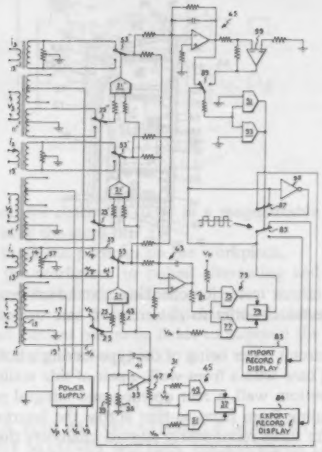
means for generating third and fourth analog signals, said signals being proportional to a voltage in said system, said third analog signal being 180° out of phase with respect to said fourth analog signal;

means for generating a relatively high frequency triangular waveform;

a comparator, said relatively high frequency triangular waveform being coupled to one input of said comparator;

switching means for selectively coupling said third or said fourth analog signal to the other input of said comparator, the output of said comparator being a pulse width modulated signal having a pulse width proportional to the amplitude of said voltage in said system;

means for multiplying said pulse width modulated output signal of said comparator with a signal proportional to said first and second current proportional analog signals, the output of said multiplier having an amplitude proportional to the electrical current in said system and having a pulse width proportional to the amplitude of the voltage in said system;



an integrator, said integrator being connected to the output of said multiplier, the output of said integrator being proportional to the energy consumed in said system;

a pulse generating circuit, the input of said circuit being connected to said integrator to thereby convert the output of said integrator to a pulse train having each pulse proportional to the energy consumed in said system;

first means for recording and displaying the energy consumed in said electrical system;

second means for recording and displaying the energy exported from said electrical system;

means for determining whether energy is being consumed by or exported from said electrical system; and

switching means responsive to said determining means for coupling said pulse train to said means for displaying the energy consumed or exported from said electrical system.

4,058,769

MODULATION SYSTEM WITH CARRIER CONTROL

Robert J. Alderman, Rte. 1, Box 205E, Ruskin, Fla. 33570

Filed July 5, 1974, Ser. No. 486,119
Int. Cl.² H04B *1/04*
U.S. Cl. 325—144 **19 Claims**

1. The method of generating a modulated carrier signal, comprising the steps of:

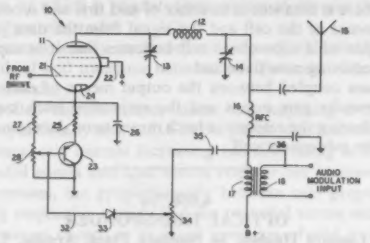
generating a carrier signal;

generating a modulation signal;

modulating said carrier signal with said modulation signal; and

concurrent with said step of modulating, adjusting the power of said carrier signal in proportion to the instantaneous power of said modulating signal so that the instantaneous power of said carrier signal is proportional to the power of said modulation signal which is available to

modulate said carrier signal, said instantaneous power of said carrier signal being at least sufficient to avoid over-



modulation by said instantaneous power of said modulating signal.

4,058,770

SOLID STATE SUBSCRIBER SELECTION SWITCHES FOR WIRED BROADCASTING SYSTEMS

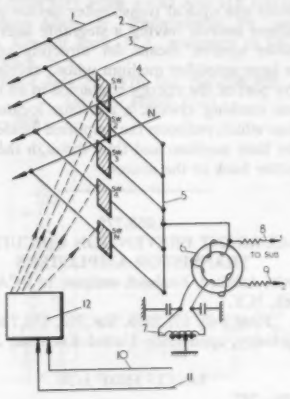
Eric John Gargini, West Drayton, England, assignor to Communications Patents Limited, London, England

Filed Sept. 17, 1975, Ser. No. 613,981

Claims priority, application United Kingdom, Sept. 21, 1974, 41196/74

Int. Cl.² H04B *3/50*

U.S. Cl. 325—308 **3 Claims**



1. In a wired broadcasting system having a set of programme signal channels, a subscriber station, a selection device for choosing the programme on a single one of said signal channels, and a cable coupling the subscriber station to said selection device, the combination comprising, programme selector means operable by said subscriber station to actuate said selection device for selecting a desired single one of said signal channels, a separate connecting path from the programme selector means for coupling each signal channel to said selection device, a signal conveying circuit between each channel and the subscriber station, a switch in each signal conveying circuit comprising a pair of diodes connected in series with opposed polarities, and means actuating each switch from a corresponding said connecting path comprising a solid state device for each switch connected as an emitter follower with a circuit connecting the emitter to the common connection between said diodes for applying potentials to the connection between the diodes to render the diodes alternatively conductive when the emitter follower passes current and non-conductive when the emitter follower is not passing current in response to the programme selector means.

4,058,771

DOUBLE-BALANCED FREQUENCY CONVERTER

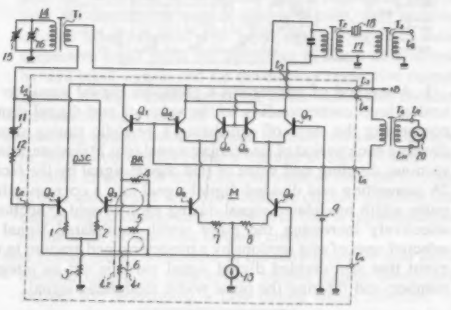
Mitsuo Ohsawa, Fujisawa, and Wataru Yamatani, Hatogaya, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 22, 1976, Ser. No. 735,042

Claims priority, application Japan, Oct. 27, 1975, 50-129030

Int. Cl.² H04B *1/26*

U.S. Cl. 325—446 **16 Claims**



1. A frequency converter, comprising:

local signal generating means including a first differential circuit having a first pair of differentially-connected transistor means and a positive feedback circuit coupling the collector electrode of one of said first pair of transistor means to the base electrode of the other, said local signal generating means having a pair of output terminals for producing a local oscillating signal thereacross;

double-balanced type mixing means including a second differential circuit having a second pair of differentially-connected transistor means, a third differential circuit having a third pair of differentially-connected transistor means, and a fourth differential circuit having a fourth pair of differentially-connected transistor means, said second differential circuit having a pair of outputs coupled to said third and fourth differential circuits, respectively;

signal input means for supplying an input signal to be frequency-converted across the base electrodes of said third pair of transistors and across the base electrodes of said fourth pair of transistors;

means for applying said local oscillating signal produced across said local signal generating means output terminals to the base electrodes of said second pair of transistor means in opposite phase relation, whereby said input signal and said local oscillating signal are mixed in said double-balanced type mixing means;

selecting means coupled to the collector electrode of one of said third pair of transistor means and to the collector electrode of one of said fourth pair of transistor means to produce a frequency-converted output signal of selected frequency; and

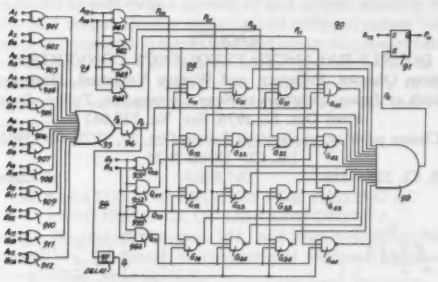
bias means coupled to said first and second differential circuits for applying the same DC bias voltages to both said circuits.

4,058,772

METHOD OF AND APPARATUS FOR CONVERTING A PLURAL-BIT DIGITAL SIGNAL TO A PULSE WIDTH MODULATED SIGNAL

Takao Mogi, Tokyo; Akira Taki, Atsugi, and Hiroshi Yamazaki, Ebina, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 25, 1976, Ser. No. 717,477
Claims priority, application Japan, Aug. 28, 1975, 50-104446
Int. Cl.[2] H04B *1/06*
U.S. Cl. 325—464 9 Claims



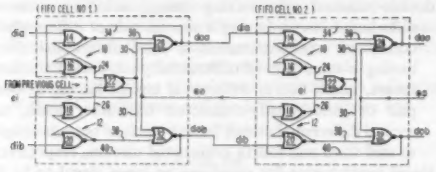
1. A method of converting a plural-bit digital signal to an analog level corresponding to the value of said digital signal, comprising the steps of generating a periodic timing signal; dividing each period of said timing signal into 2^n predetermined sections; dividing said value of said digital signal by the factor 2^n; converting said divided digital signal into a corresponding pulse width modulated signal during each of said 2^n sections; selectively increasing the pulse width modulated signal in selected ones of said sections by a predetermined amount in the event that said divided digital signal value is not an integral number; and filtering the pulse width modulated signal.

4,058,773

ASYNCHRONOUS SELF TIMED QUEUE

Becky J. Clark, La Jolla, and Charles L. Seitz, Palo Alto, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 15, 1976, Ser. No. 666,609
Int. Cl.[2] G11C *19/00, 19/28*
U.S. Cl. 328—37 6 Claims



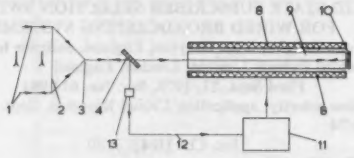
1. In an asynchronous system having a plurality of asynchronous cells in series, each cell for the system comprising:
first and second latch means for storing binary data;
a data presence gate having input means and output means for producing an output signal indicative of data stored in either of said first and second latch means, said first and second latch means being coupled to said input means of said data presence gate;
first and second transfer gate means each having input means for transferring data from said first and second latch means to a corresponding one of said first and second latch means of a subsequent cell;
said first latch means, said output means of said data presence gate of the cell, and the output means of a data presence gate from a subsequent cell being coupled to said input means of said first transfer gate means;
said second latch means, said output means of said a data presence gate of the cell, and the output means of a data presence gate from a subsequent cell being coupled to said input means of said second transfer gate means;
whereby data can be transferred to a subsequent cell when there is data stored in either of said first and second latch means of the cell and the signal from the data presence gate of a subsequent cell indicates that it is capable of receiving new data; and
means coupled between the output means of each of said transfer gate means and the respective latch means for clearing the respective latch means upon data transferal to the subsequent cell.

4,058,774

OPTICAL TRANSPONDER

John Leonard Hughes, 34 Nungara Place, Aranda, Canberra A.C.T., Australia (2614)

Filed Oct. 20, 1976, Ser. No. 734,112
Claims priority, application Australia, Oct. 21, 1975, 3665/75
Int. Cl.[2] H01S *3/02, 3/10;* G01P *3/36*
U.S. Cl. 330—4.3 10 Claims



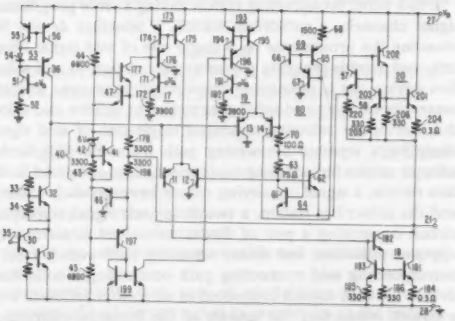
1. A remote site optical transponder device powered by a long life power source, having a steerable laser light collector/transmitter system, means for directing collected laser light into a laser amplifier medium whose excitation means is triggered by part of the energy contained in an incident pulse from a laser tracking system, a reflector located behind the laser medium which redirects the amplified incident pulse back through the laser medium and then through the light collector/transmitter back to the source.

4,058,775

OVER-CURRENT PREVENTION CIRCUITRY FOR TRANSISTOR AMPLIFIERS

Brian Crowle, Ashford, England, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 17, 1976, Ser. No. 658,724
Claims priority, application United Kingdom, Jan. 27, 1976, 7657/75
Int. Cl.[2] H03F *3/30*
U.S. Cl. 330—267 21 Claims



14. Amplifier circuitry comprising:
first and second terminals for receiving a fixed operating potential therebetween;

a transistor having base and emitter and collector electrodes, having a base-emitter junction between its base and emitter electrodes and having a variable-conduction path between its collector and emitter electrodes the conduction of which is regulated responsive to current through its base electrode;

load means serially connected with the variable conduction path of said transistor between said first and said second terminals;

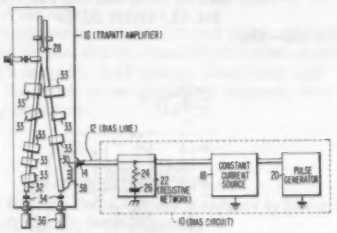
controlled current source means for supplying a current proportionally responsive to the potential across said load means, said current increasing and decreasing as the potential across said load means respectively increases and decreases, the proportionality between said proportionally responsive current and the potential across said load means so chosen as to avoid operation of said transistor outside its Safe Operating Area Rating; and

means for applying, so long as available from said controlled current source means, a portion of said current linearly related to the potential across said load means, which portion is applied to the base electrode of said transistor and is linearly responsive to swings of an input signal in one polarity.

4,058,776
BIAS CIRCUIT FOR AVALANCHE DIODES

Elmer Lawrence Allen, Jr., Philadelphia, Pa., and Hirohisa Kawamoto, Kendall Park, N.J., assignors to RCA Corporation, New York, N.Y.

Filed July 29, 1976, Ser. No. 709,925
Int. Cl.² H03F 3/10
U.S. Cl. 330—299 **4 Claims**



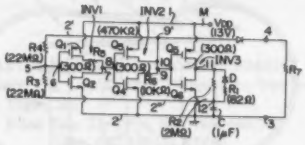
1. In a bias circuit for a large voltage swing avalanche device, said bias circuit being of the type having a resistance comprising a power supply coupled to a bias line, said bias line being coupled to said diode through an inductor and an impedance network means including a resistor, said device having a negative resistance characteristic at spurious sub-microwave frequencies, the improvement wherein:

said impedance network means is shunted across said bias line and ground, the resistive component of said impedance network means being chosen such that the impedance of said bias circuit is mismatched to said negative resistance of said device at said spurious sub-microwave frequencies, to prevent thereby spurious sub-microwave negative resistance oscillations, and further, such that the resistance of said bias circuit is lowered, to prevent thereby spurious low frequency relaxation oscillation to provide thereby for large voltage swing avalanche operation of said device for periods longer than a substantial portion of one cycle of said spurious oscillations.

4,058,777
OSCILLATING CIRCUIT

Katsutoshi Kuwabara, Yamato, and Katsuaki Goto, Settsu, both of Japan, assignors to Hochiki Corporation, Japan

Filed July 26, 1976, Ser. No. 708,683
Claims priority, application Japan, July 25, 1975, 50-90055; July 25, 1975, 50-90056
Int. Cl.² H03K 3/282, 3/353
U.S. Cl. 331—57 **8 Claims**



1. An oscillator circuit, comprising:

first, second and third bistable circuits each having a pair of stable operating states and each having a respective input port for receiving input signals and a respective output port for developing output signals thereat, said bistable circuits being responsive to input signals applied to their respective input ports for operating in states determined by said input signals and for developing respective output signals having values according to the states said bistable circuits are operating in;

connecting means connecting said bistable circuits is cascade in the named order so that a change of state of said first bistable circuit will effectuate successive changes of state of said second and said third bistable circuit, whereby the output signal of said third bistable circuit is representative of the state of said first bistable circuit;

first timing means connected to the output port of said third bistable circuit to recieve the output signals developed thereat for developing a first timing signal effective to change the state of said first bistable circuit from a first state to a second state thereof after a first time interval has elapsed after said third bistable circuit has changed from a state corresponding to the second state of said first bistable circuit to a state corresponding to the first state of said first bistable circuit and for applying said first timing signal to the input port of said first bistable circuit; and

second timing means connected to the output port of said third bistable circuit to receive the output signals developed thereat for developing a second timing signal effective to change the state of said first bistable circuit from the second state to the first state thereof after a second time interval has elapsed after said third bistable circuit has changed from a state corresponding to the first state of said first bistable circuit to a state corresponding to the second state of said first bistable circuit and for applying said second timing signal to the input port of said first bistable circuit, whereby the states of said bistable circuits oscillate between their respective stable operating states with a period equal to the sum of said first time interval and second time interval.

4,058,778
HIGH POWER GAS TRANSPORT LASER

Theodore S. Fahlen, San Jose, and Russell F. Kirk, Sunnyvale, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed June 25, 1976, Ser. No. 699,628
Int. Cl.² H01S 3/00
U.S. Cl. 331—94.5 G **4 Claims**

1. High power gas transport laser apparatus comprising

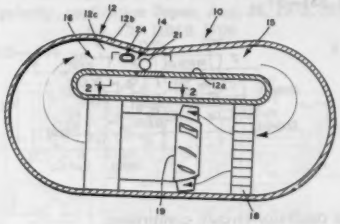
a channel having top and bottom walls and side walls,

a gas mixture comprising carbon dioxide in said channel,

means for moving said gas mixture through said channel at a predetermined velocity,

means for producing an electric discharge in said gas mixture transversely of the direction of flow comprising

a tubular cathode disposed between said top and bottom walls transversely of the direction of said gas flow, said cathode having a cross-sectional shape elongated in the direction of gas flow and rounded leading and trailing edges,



a plane segmented anode adjacent to said bottom wall on the downstream side of said cathode and substantially parallel thereto, and

means for electrically energizing said cathode and anode to establish therebetween a glow mode electric discharge through said flowing gas mixture,

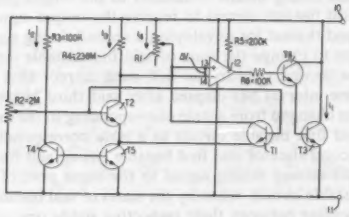
mirror means adjacent the side walls of said channel and optically aligned with said electric discharge for directing a beam of coherent light therethrough.

4,058,779

TRANSISTOR OSCILLATOR CIRCUIT USING THERMAL FEEDBACK FOR OSCILLATION

Phillip Edward Fraley, Reading, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 28, 1976, Ser. No. 736,375
Int. Cl.[2] H03K *3/28*; H05B *41/29*
U.S. Cl. 331—108 R **9 Claims**



1. An oscillator circuit comprising:

a comparator element having first and second inputs;

first and second transistors coupled respectively to the first and second inputs of said comparator, said transistors being unbalanced so as to create a potential difference at the inputs of said comparator when a potential is supplied to said circuit thereby permitting a current to flow from the output of said comparator; and

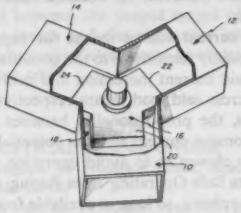
a heater element coupled to the output of said comparator, said element being placed sufficiently close to the first transistor and sufficiently distant from said second transistor such that heat generated by the element will affect the output of the first transistor in order to reduce the potential difference sufficiently to shut off any current from the comparator to the heater element.

4,058,780

WAVEGUIDE CIRCULATOR

Gordon Riblet, Wellesley, Mass., assignor to Microwave Development Labs., Inc., Needham Heights, Mass.

Filed Aug. 2, 1976, Ser. No. 710,893
Int. Cl.[2] H01P *1/38*
U.S. Cl. 333—1.1 **12 Claims**



1. A three-port waveguide circulator comprising:

three waveguide arms meeting at a common junction,

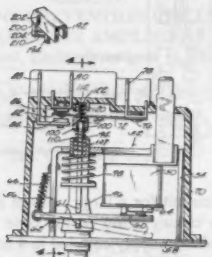
a ridge structure mounted on a wall of the waveguide arms at the common junction and having ridge sections extending along each arm with the ridge sections each being narrower than the wider internal dimension of the waveguide arm to thereby define slots between either side of the ridge section and respective narrow walls of each waveguide arm, each said ridge section having a wall segment facing the narrow wall of each waveguide arm and extending substantially parallel to the narrow wall, and a gyromagnetic element disposed at the junction adapted to be biased by a d.c. magnetic field.

4,058,781

DOUBLE POLE CONTACT OPERATING MECHANISM

Spencer C. Schantz, 16608 W. Rogers Drive, New Berlin, Wis. 53151

Filed Jan. 16, 1976, Ser. No. 649,776
Int. Cl.[2] H01H *50/58*
U.S. Cl. 335—186 **13 Claims**



1. In an electrical device having two flexible electrically conductive contact arms, each having a contact portion, said device having cooperating electrical contacts, and there being means for applying pressure to said arms to move the contact portions into closing engagement with said cooperating contacts, the improvement wherein said means for applying said pressure includes a movably mounted actuator mounted on said device reciprocably movable in a direction transversely of said contact arms and toward and away from said arms, and having an end portion movable toward said arms, and a yoke of electrical insulating material having a pivotal connection intermediate its ends with said actuator, said yoke extending transversely of said arms and being long enough to contact both arms and apply contact closing pressure thereto when

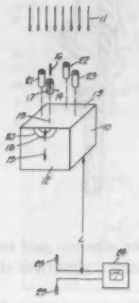
said actuator is moved a predetermined distance toward said arms, said pivotal connection of said yoke tending to equalize contact closing pressure.

4,058,782

METHOD AND APPARATUS FOR COMPENSATION OF INTERFERENCE MAGNETIC FIELDS

Friedrich M. O. Förster, Grathwohlstrasse 4, D-7410 Reutlingen, Germany

Filed Sept. 2, 1975, Ser. No. 609,583
Claims priority, application Germany, Sept. 12, 1974, 2443672
Int. Cl.[2] H01F *13/00*
U.S. Cl. 335—219 **15 Claims**



1. A method for stable compensation of the magnetic interference fields produced by the vertical component of the earth's magnetic field in the vicinity of an article including a housing and components therein in which a compensation moment opposite to the magnetic moment induced in the article by the vertical component is produced and the article is also subjected to a vertically directed alternating magnetic field with decaying amplitude, which comprises the steps of:

locating at least one permanent magnet adjacent an outer surface of the article;

adjusting the magnetic moment induced in the article by the permanent magnet to compensate for the effect thereon of the earth's magnetic field vertical component; and

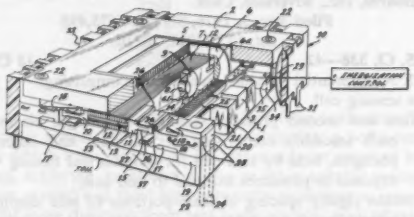
subjecting the article to an alternating magnetic field with decaying amplitude.

4,058,783

RAPID ACTION RELAY

Hans-Werner Reuting, Peine, Germany, assignor to Elmeg Elektro-Mechanik GmbH, Peine, Germany

Division of Ser. No. 485,322, July 3, 1974, Pat. No. 3,949,332. This application Nov. 13, 1975, Ser. No. 631,746
Claims priority, application Germany, July 9, 1973, 2334838
Int. Cl.[2] H01F *7/08*
U.S. Cl. 335—276 **7 Claims**



1. In a relay having a swivel armature, for pivoting about an axis and having two arms extending from the axis, the relay having additionally an enveloping energizing coil on a carrier and a yoke structure providing for abutment with the two arms of the armature, the armature having a shaft; the improvement comprising:

a pair of disks for journalling the shaft inside of the carrier, the disks journalling the axis of the shaft eccentrically to the circular peripheries of the disks, and

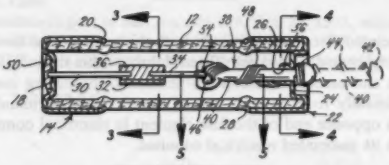
the yoke structure establishing two positions of abutment for the armature, whereby the two arms respectively abut the yoke structure in two diagonally opposed dispositions in each of the two positions.

4,058,784

INDICATOR-EQUIPPED, DUAL-ELEMENT FUSE

Aldino J. Gaia, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Feb. 23, 1976, Ser. No. 660,770
Int. Cl.[2] H01H *85/30*
U.S. Cl. 337—164 **15 Claims**



15. An indicator-equipped, dual-element, electric fuse which comprises a casing, a current-conducting member which is disposed within said casing and which will fuse if the temperature thereof is raised to the melting temperature thereof, a second current-conducting member which is disposed within said casing and which will fuse if the temperature thereof is raised to the melting temperature thereof, said second current-conducting member having one end thereof adjacent one end of the first said current-conducting member, heat-softenable alloy which has a melting temperature substantially lower than the melting temperature of either of said current-conducting members and which normally holds said one ends of said current-conducting members in mechanical engagement and in electrically-conducting relation, an indicator which is disposed in an initial retracted position or in a moved, extended position, said indicator being held in said initial, retracted position as long as both of said current-conducting members remain intact and said heat-softenable alloy remains in mechanical engagement and electrically-conducting relation with said one ends of both of said current-conducting members, and a spring which maintains both of said current-conducting members and said heat-softenable material under tension, said spring moving said indicator to said moved, extended position and simultaneously providing relative movement between said two current-conducting members and between one of said current-conducting members and said heat-softenable alloy whether said heat-softenable alloy softens or one or the other of said current-conducting members fuses.

4,058,785

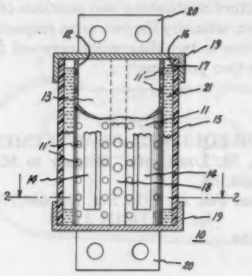
CURRENT LIMITING FUSE

Gerhard Frind, Albany; Robert W. Fisk, Schenectady, and Michael H. McLaughlin, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 22, 1976, Ser. No. 725,380
Int. Cl.[2] H01H *85/02*
U.S. Cl. 337—204 **12 Claims**

1. A current limiting fuse comprising at least one rigid electrically insulating member having a plurality of rupturable vents defining a narrow space forming an arc constrictor, a dielectric liquid substantially filling the narrow space, the member having opposite open ends, at least one fuse element,

each such fuse element immersed in the dielectric fluid and extending longitudinally adjacent the member, an outer casing having opposite open ends surrounding the member and spaced therefrom, at least the interior portion of the casing being electrically insulating, a pair of metallic end caps with



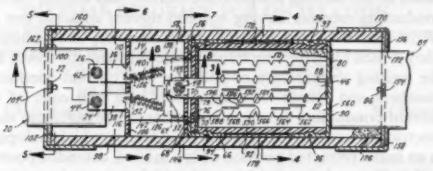
associated electrical terminals, both the member and the casing having opposite open ends fitted tightly within the metallic end caps and associated electrical terminals, the casing insulated electrically from at least one of the electrical terminals, and each opposite end of the fuse element in electrical connection with its associated electrical terminal.

4,058,786

PROTECTOR FOR ELECTRIC CIRCUITS

Aldino J. Gaia, and Angelo Urani, both of St. Louis, Mo., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Nov. 17, 1975, Ser. No. 632,621
Int. Cl.² H01H *85/04*
U.S. Cl. 337—293 **15 Claims**



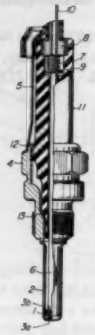
1. An electric fuse that comprises terminals, a first electrical path between said terminals which has a predetermined current rating and a predetermined current-interrupting characteristic and which includes a fusible element, and a second electrical path between said terminals which is connected in shunting relation with at least part of said first electrical path and which includes a shunt element, said fusible element having at least one fusible electrical path therein which has a predetermined peak current (I_p) and energy (I^2t), said shunt element having at least one fusible electrical path therein which has a given peak current (I_p) and energy (I^2t), said peak current (I_p) and energy (I^2t) of said fusible electrical path in said shunt element being, respectively, two hundred percent or less of said peak current (I_p) and energy (I^2t) of said fusible electrical path in said fusible element when said shunt element and said fusible elements are tested at the current-interrupting rating of said electric fuse, said first electrical path responding to a long-continued potentially-hurtful relatively-low overcurrent to electrically disconnect said fusible element from at least one of said terminals, said second electrical path thereafter responding to said long-continued potentially-hurtful relatively-low overcurrent to open the circuit in which said electric fuse is connected, both said fusible electrical paths in said fusible element and in said shunt element responding to a short circuit to help open said circuit.

4,058,787

TEMPERATURE SENSOR

Norio Ichikawa, Mito, and Sadayasu Ueno, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 23, 1976, Ser. No. 669,702
Claims priority, application Japan, Apr. 4, 1975, 50-40290
Int. Cl.² H01C *7/04*
U.S. Cl. 338—22 R **6 Claims**



1. A temperature sensor wherein said senser comprises:
an electrically conductive cylindrical sheath closed at one end;
an electrically conductive support member having a hollow portion and solidly secured to the open end of the sheath at one end thereof;
an insulating body having a hollow portion and supported within the support member;
a thermistor disposed inside of the closed end face of said sheath and one of which electrode surfaces is electrically connected to said sheath;
a shaft made of an electrically conductive material whose one end is brought into contact with the other of the electrode surfaces of said thermistor and extending through the hollow portions of the sheath and the insulating body; and
means for providing the contact pressure between the shaft, the thermistor and the sheath;
whereby the variance in resistance value of the thermistor is taken out between the support member and the shaft to carry out temperature sensing;
characterized in that:
a precious metal chip is welded and secured to the end face of the shaft on the side of thermistor.

4,058,788

DIFFERENTIAL PRESSURE TRANSDUCER

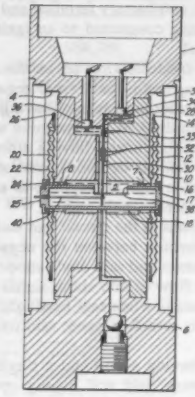
Allen Howe Andrews, Riverside; James Norman McPherson, Orange; John Thomas Burns, Jr., Mira Loma, and John Matthew Hendrie, Riverside, all of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Apr. 5, 1976, Ser. No. 673,493
Int. Cl.² H01L *10/10*
U.S. Cl. 338—42 **13 Claims**

1. A differential pressure transducer, comprising:
a sensing cell,
first and second pressure sensitive diaphragm assemblies, each assembly comprising nested inner and outer diaphragms, held by said cell for longitudinal flexing when exposed to pressures external to said cell,
means rigidly spacing at least portions of said diaphragm assemblies at a substantially constant distance, whereby the flexing positions of said assemblies are determined by the differential between the external pressures to which they are exposed,
a deflectable motion sensing means comprising a cantilever

beam secured near one end to said cell and having at least one strain gage mounted thereon to measure deflections of said beam;

a longitudinally rigid but transversely flexible and resilient coupling means for coupling said diaphragm assemblies with said motion sensing means, comprising a strut wire secured between one of said diaphragm assemblies and said motion sensing means, wherein said beam is secured



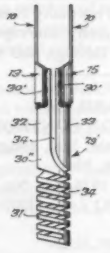
to said coupling means near its other end and said beam has an unflexed position substantially transverse to the unflexed position of said strut wire so as to move along a substantially arcuate path when deflected by said strut wire, and wherein said coupling means is adapted to deflect said motion sensing means in response to longitudinal flexing of said assemblies and to flexingly accommodate to transverse movements of said motion sensing means.

4,058,789

ELECTRICAL CONNECTOR

Robert G. Bavisotto, Buffalo; John E. Reynolds, Kenmore, and Robert S. Sbert, North Tonawanda, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Apr. 5, 1976, Ser. No. 673,834
Int. Cl.² H01C 1/14
U.S. Cl. 338—322 **8 Claims**



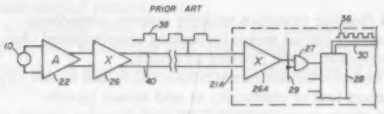
1. An electrical connector manufactured from an electrically conductive material which connector comprises a body portion to which a first electrical conductor may be attached by welding, soldering, an electrical clip or other suitable means; and first, second and third legs outwardly extending in essentially the same direction from said body portion, each of said legs being defined by front and rear faces and right and left edges, the second of said legs being disposed in a position approximately between said first and third legs, said legs being oriented so the right edge of said first leg is proximate the left edge of said second leg, the right edge of said second leg is proximate the left edge of said third leg and the left edge of said first leg and right edge of said third leg each face is approximately opposite directions away from all portions of said electrical connector, said legs being manufactured of a metallic material having a spring resiliency which permits said second leg to be spacially separated by force from said first and third legs thus permitting a second electrical conductor to be placed between said second leg and said first and third legs and permitting said second electrical conductor to be retained by the rear face of said second leg and the front faces of said first and third legs.

4,058,790

METHOD AND APPARATUS FOR TRANSMITTING GEOPHONE SIGNALS OVER CABLES WITH MINIMUM NOISE

Daniel Silverman, Tulsa, Okla., and J. Robert Fort, Altadena, Calif., assignors to Geophysical Systems Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 626,129, Oct. 28, 1975, which is a continuation-in-part of Ser. No. 358,077, May 7, 1973, Pat. No. 4,001,768. This application Mar. 10, 1976, Ser. No. 665,808
Int. Cl.² G01V 1/22
U.S. Cl. 340—15.5 TS **12 Claims**



1. In a 1 bit digital geophone signal acquisition and transmission system having a plurality of array terminals, each of which receives a plurality of analog signals from a plurality of geophones connected respectively to a plurality of different pairs of conductors, and in said array terminals of said system said plurality of analog signals are amplified at constant gain and on command are sampled and digitized to 1 bit, the improvement in the method of transmission of said plurality of analog geophone signals from said geophones to said array terminals, comprising the steps of:

a. at each of said plurality of geophones, amplifying at constant gain and zero crossing coding each of said analog geophone signals to form square wave analog signals; and

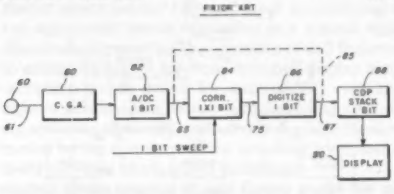
b. transmitting each of said square wave analog signals to said array terminals over separate pairs of conductors.

4,058,791

METHOD AND APPARATUS FOR PROCESSING SEISMIC SIGNALS FROM LOW ENERGY SOURCES

Lincoln A. Martin, Altadena, and William Franklin Fenley, Jr., Pasadena, both of Calif., assignors to Geophysical Systems Corporation, Pasadena, Calif.

Filed Sept. 29, 1975, Ser. No. 617,859
Int. Cl.² G01V 1/24, 1/36
U.S. Cl. 340—15.5 MC **19 Claims**



1. In a seismic prospecting system, having;

a. a low energy seismic source;

b. a plurality of geophones at spaced positions distant from said source;

c. means to amplify and digitize the geophone signals; the

method of operation and processing the seismic data comprising;

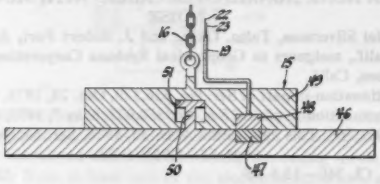
1. operating said source in C.D.P. format, whereby each source operation is at a different spaced-apart independent position;
2. amplifying and digitizing the geophone signals to 1 bit;
3. C.D.P. stacking said 1 bit digitized signals; and wherein
4. the C.D.P. fold is at least 40.

4,058,792

SHIP SECURITY SYSTEM

James A. Soltesz, 15042 Garfield, Allen Park, Mich. 48101

Filed Mar. 29, 1976, Ser. No. 671,169
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—29 **1 Claim**



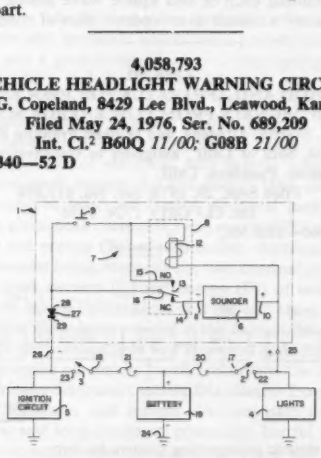
1. A floating structure security system comprising:
a. a sensor circuit means for sensing unanticipated changes of condition of the floating structure;
b. a detector circuit means connected to said sensor circuit to detect loss of continuity in said sensor circuit;
c. an alarm means operated by said detector circuit means;
d. a power supply means connected to said sensor circuit means, detector circuit means, and alarm means to provide operating erergy for said circuit means and alarm means;
e. said sensor circuit means including a submersible sensor to sense unanticipated changes in position of the floating structure; and,
f. said submersible sensor including,
1. a pair of weights;
2. a switch means including a switch member mounted in each of said pair of weights; and,
3. means for movably connecting said weights so that the switch members are connected when the weights are moved into engagement with each other and the switch members are disconnected when the weights are moved apart.

4,058,793

VEHICLE HEADLIGHT WARNING CIRCUIT

William G. Copeland, 8429 Lee Blvd., Leawood, Kans. 66206

Filed May 24, 1976, Ser. No. 689,209
Int. Cl.[2] B60Q *11/00*; G08B *21/00*
U.S. Cl. 340—52 D **3 Claims**



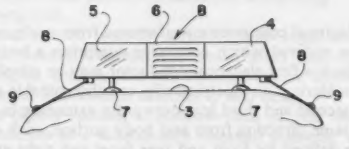
1. A headlight warning circuit for use in a vehicle having a headlight switch, an ignition switch, and a negative ground electrical system, each of said switches having a battery terminal and a non-battery terminal, said non-battery terminals having no direct, non-load intervening path to the vehicle battery, there being a potential difference from said headlight switch non-battery terminal to said ignition switch non-battery terminal when said headlight switch is closed and said ignition switch is open, said potential difference being capable of providing an alarm signal current, said circuit comprising:
a. a positive circuit terminal and a negative circuit terminal, said positive circuit terminal being connected to a headlight switch non-battery terminal and said negative circuit terminal being connected to an ignition switch non-battery terminal;
b. a rectifier diode having an anode and a cathode, said cathode being connected to said negative circuit terminal;
c. an electric sounding means having a positive terminal thereof connected to said positive circuit terminal, said electric sounding means having a negative terminal connectable to said diode anode, said sounding means emitting an audible tone in response to said alarm signal current flow therethrough; and
d. override means in the circuit and including an interrupter switch connected between the negative terminal of said sounding means and said diode anode for selectively interrupting the flow of said alarm signal current through said sounding means when said headlight switch is closed and said ignition switch is open; said override means including:
1. a relay having a coil and a single pole double throw relay switch, said coil having opposite terminals and said relay switch having a normally closed terminal, a normally open terminal, and a common terminal;
2. said relay coil having one terminal connected to said sounding means positive terminal, the other coil terminal being connected to said relay switch normally open terminal;
3. said relay switch normally closed terminal being connected to said sounding means negative terminal;
4. said relay switch common terminal being connected to said diode anode, said interrupter switch being said relay switch normally closed terminal and said common terminal; and
5. a normally open, momentary contact mute switch connected between said relay switch common terminal and said relay switch normally open terminal, whereby closing said mute switch when said sounding means is conducting current causes said relay coil to be energized thereby making and holding a connection between said relay switch common terminal and said relay switch normally open terminal and breaking the connection between said normally closed terminal and said common terminal thereby interrupting the flow of said alarm signal current through said sounding means.

4,058,794

VEHICLE BEACON CONTROL SYSTEM

W. Kenneth Menke, Glendale, Mo., assignor to Public Safety Equipment, Inc., St. Louis, Mo.

Filed Sept. 16, 1976, Ser. No. 723,760
Int. Cl.[2] B60Q *1/00*; H02P *7/00*
U.S. Cl. 340—92 **10 Claims**



1. In a vehicle beacon light: a rotatable pod; at least one lamp carried by said pod; motor means connected to said pod to rotate said pod; a source of electrical power; and electrical circuit connections between said power source, said motor

means and said one lamp; said circuit connections including switch means establishing a first circuit path to said one lamp to illuminate the lamp, and a second circuit path responsive to pod rotation for automatically stopping pod rotation, said second circuit path including a contact means rotatable with said pod, a non-conductive portion in said rotatable contact means, and means cooperating with said rotatable contact means and non-conductive portion to determine the position for said automatic stopping of pod rotation.

4,058,795

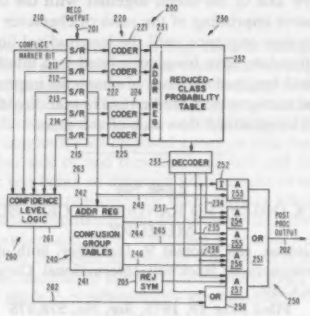
METHOD AND APPARATUS FOR CONTEXT-AIDED RECOGNITION

Gerald John Balm, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 294,706, Oct. 3, 1972, abandoned. This application Dec. 23, 1974, Ser. No. 535,401

Int. Cl.[2] G06K *9/00*

U.S. Cl. 340—146.3 WD **8 Claims**



1. A system for enhancing the recognition of characters, comprising:

recognition means responsive to a sequence of character patterns for producing a sequence of character codes identifying said characters with respect to a predetermined plurality of categories;

coding means coupled to said recognition means for translating a plurality of said character codes to a plurality of reduced codes corresponding to a plurality of sets of said categories, the number of said sets being substantially smaller than the number of said categories;

first storage means responsive to said reduced codes for producing a context code representing one set of said categories;

second storage means for holding a plurality of confusion codes associated with a predetermined one of said character codes, each of said confusion codes identifying one of said categories; and

gating means responsive to said context code for selecting one of said confusion codes.

4,058,796

SYSTEM FOR PROVIDING A DRIVING PERSON WITH HELPFUL INFORMATION FOR DRIVING A VEHICLE

Kazuo Oishi, Oobu; Takashi Yamada, Anjo, and Shuzo Yoshida, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 4, 1975, Ser. No. 555,304

Claims priority, application Japan, Mar. 5, 1974, 49-26091

Int. Cl.[2] G08B *21/00*

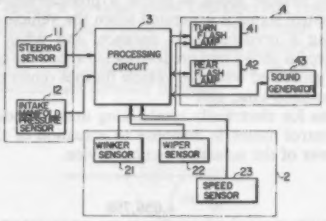
U.S. Cl. 340—52 F **17 Claims**

1. A method for providing a driving person with helpful information for driving a vehicle comprising the steps of:

detecting travelling conditions of a vehicle responding to a driving operation of said vehicle by a driver who is driving said vehicle;

obtaining a variation pattern by calculating the rate of change per unit time of a detection signal generated in the preceding detecting step;

computing a normal pattern always representing the latest average driving operation by said driver by sequentially accumulating data of said variation pattern at every predetermined unit of time, while sequentially cancelling the oldest data accumulated,



further computing a deviation of said variation pattern from said normal pattern; and

in accordance with the result of the computation in the preceding computing step, generating information giving said driver notice anticipated from the degree of the deviation.

4,058,797

TURN SIGNAL SYSTEM

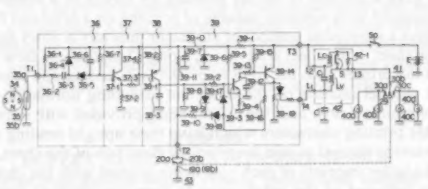
Tomoaki Sekiguchi, Hamamatsu; Hiroyasu Miyao, Iwata, and Hidekazu Shimizu, Hamamatsu, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed June 3, 1976, Ser. No. 692,320

Claims priority, application Japan, June 9, 1975, 50-77761

Int. Cl.[2] B60Q *1/00;* **H01H** *3/16*

U.S. Cl. 340—56 **21 Claims**



1. A turn signal system for a vehicle comprising:

at least one direction display lamp for indicating a right turn and a left turn of the vehicle, said lamps being respectively provided on the right and left sides of the vehicle;

flasher means coupled to said display lamps for intermittently lighting at least one direction display lamp, said flasher means having a control input for receiving a control signal; and means responsive to a control signal for electrically terminating the operation of said flasher means to extinguish said at least one direction display lamp;

an actuation switch device for mechanically switching the right or left direction display lamp including a self-returning actuating lever and a selectively movable block means moved by the operation of the actuating lever, said selectively movable block means including:

contact means coupled to said flasher means for causing said intermittent lighting of the right or left direction display lamp as a function of the direction of actuation of the actuating lever; and

means for retaining said movable block means in its moved position when the actuating force is released from the

actuating lever and the actuating lever returns to its initial position;

a source of a signal which is a function of the traveling speed of the vehicle;

control means coupled to said control input of said flasher and responsive to the return of said actuating lever after it is actuated and responsive to said signal representing said vehicle traveling speed, for feeding a control signal to said control input of said flasher means for electrically terminating the operation of said flasher means such that when the vehicle speed is below a predetermined speed the control signal is generated when the vehicle finishes running a predetermined distance, and when the vehicle speed is above said predetermined speed the control signal is generated when the vehicle finishes running for a predetermined time; and

means for electrically establishing initial conditions in said control means in response to actuation of the actuating lever of the actuation switch device.

4,058,798

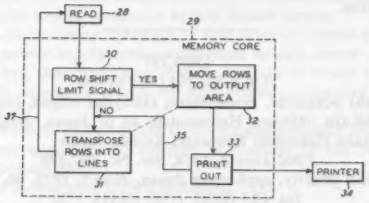
LONGITUDINALLY EXTENDED PRINTING METHOD FOR COMPUTERS

Robert Andrew Nagy, 7786 Woodward Ave., Woodridge, Ill. 60515

Continuation-in-part of Ser. No. 23,630, March 30, 1970, abandoned. This application July 12, 1972, Ser. No. 270,952

Int. Cl.[2] G06F *3/12;* **G06K** *3/00*

U.S. Cl. 364—900 **3 Claims**



1. In a method of output printing by means of a computer equipped with a printer capable of printing on a print-out form sheet a substantial number of character imprints in rows across the sheet as the sheet is advanced along a longitudinal flow axis in the printer with the rows as printed succeeding one another in parallel relation on the sheet and extending normal to said longitudinal flow axis, the printer being provided with imprintable printing characters which have their upright reading axes oriented normal to said longitudinal flow axis of the sheet, the character imprints of each row being aligned with the character imprints of the other rows to form longitudinal lines of character imprints which extend parallel to said longitudinal flow axis from a leading end portion of the sheet to the trailing end portion of the sheet and provide printed material to be read in a direction parallel to said longitudinal flow axis, the improvement comprising:

printing with said printing characters of said printer a selected plurality of said character imprints across the leading end portion of the sheet in a row extending normal to said longitudinal flow axis of the sheet and with the reading axes of the imprinted characters aligned across the sheet and normal to said longitudinal flow axis;

thereby completing on the sheet the character imprints for the leading extremities of said longitudinal lines of character imprints for forming the printed material to be read in a direction parallel to said longitudinal flow axis of the sheet;

progressively advancing the form sheet one imprint row at a time along said longitudinal flow axis of the sheet in the direction of the leading end portion of the sheet and of the leading extremities of said longitudinal lines of character imprints;

after each imprint row advance of the sheet, imprinting with said printing characters of said printer another row of a selected plurality of said character imprints to extend across the sheet and normal to the longitudinal flow axis of the sheet and with the imprinted characters in said another row being aligned in side-by-side relation to the character imprints of the preceding imprinted row of the character imprints, and thereby adding successive character imprints to said longitudinal lines of character imprints as required for forming said printed material;

continuing to add character imprints to said longitudinal lines of character imprints row-by-row by imprinting successive rows of selected pluralities of the character imprints as the sheet is progressively advanced row-by-row along said longitudinal flow axis, until finally trailing extremities of the longitudinal lines of character imprints are completed at said trailing portion of the sheet;

and thereby completing the printed material of all of said longitudinal lines of character imprints;

whereby after imprinting has been completed as a result of the row-by-row advance of the sheet along said longitudinal flow axis of the sheet, together with the coordinated successive imprinting of the rows of character imprints in row-by-row sequence until the longitudinal lines of character imprints have been completed into intelligible context, said longitudinal lines of character imprints provide printed matter which can be read in said direction parallel to said longitudinal flow axis of the sheet.

4,058,799

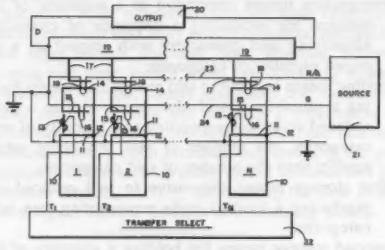
BLOCK ORIENTED RANDOM ACCESS BUBBLE MEMORY

Peter K. George, and Thomas R. Oeffinger, both of Placentia, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 19, 1975, Ser. No. 578,975

Int. Cl.[2] G11C *19/08*

U.S. Cl. 340—174 TF **20 Claims**



1. In combination,

at least one storage loop,

generator means for producing data,

transfer means interposed between said storage loop and said generator means for selectively transferring data from said generator means to a first location in said storage loop in response to a first signal,

merging means,

propagation path means connected to said generator means and to said merging means which forms a second location in said storage loop,

said transfer means selectively transferring data from said first location in said storage loop to said propagation path means in response to a second signal,

detector means, and

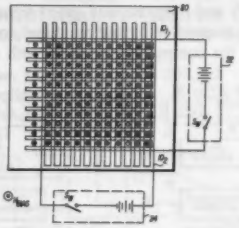
replicate means for selectively nondestructively transferring data from said propagation path means to said detector means.

4,058,800

IMAGE PICKUP ELEMENT AND SYSTEM UTILIZING MAGNETIC BUBBLES

Yoshiki Kikuchi, Ebina, Japan, assignor to Fuji Xerox Co. Ltd., Tokyo, Japan

Filed Dec. 3, 1975, Ser. No. 637,141
Claims priority, application Japan, Dec. 3, 1974, 49-137738
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—3 3 Claims



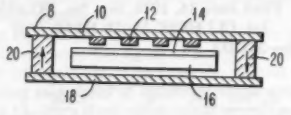
1. A photomagnetic image pickup element comprising
a thin film of magnetic material capable of having magnetic bubbles formed therein where the intensity of the magnetic-bubble collapse field varies with temperature;
first conductor set disposed on one side of said thin film; and
a second conductor set disposed either on said one side or on the other side of said thin film, said first and second conductor sets being so disposed with respect to one another as to form a lattice shape on said thin film where said first and second conductor sets are orthogonal with respect to one another and each comprises a plurality of parallel conductor elements disposed in a first direction, the pitch between successive elements alternately being P_1 and P_2 where pitch P_2 is substantially greater than pitch P_1.

4,058,801

FIELD ACCESS METHOD FOR BUBBLE MEMORIES

Otto Voegeli, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 3, 1976, Ser. No. 692,259
Int. Cl.[2] G11C *11/14, 19/00*
U.S. Cl. 365—39 14 Claims



1. A field access system for magnetic bubble domains comprising:
a sheet of magnetic material in which bubble domains can exist,
a drive film of magnetically soft material in spaced relationship with said sheet, and
drive elements of magnetically soft material in contact with said drive film wherein said drive elements are driven through an exchange interaction with said drive film.

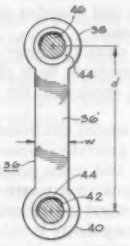
4,058,802

CONTAMINATING SPILL DETECTION ARRANGEMENT

Frank Meyers, 317 Calle Mayor, Redondo Beach, Calif. 90277

Filed Feb. 9, 1976, Ser. No. 656,434
Int. Cl.[2] G08B *21/00, 1/08*
U.S. Cl. 340—224 27 Claims

1. A contamination spill detection arrangement of the type adapted to detect the presense of predetermined contaminants in a body of water and transmit signals to a remotely located receiving station in response to the detected presence of the contaminants, and comprising, in combination:
at least one detector station means positioned at a predetermined location in the body of water, and said at least one detector station comprising:
detector element means comprising at least one contaminant detector element, said at least one contaminant detector element at least partially submerged in the water, and said at least one contaminant detector element having a predetermined characteristic responsive to presence of the predetermined contaminant thereon and varying said predetermined characteristic for the condition of the contaminant impinging on said at least one contaminant detector element:



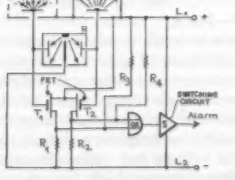
sensing means coupled to said at least one contaminant detector element for sensing said variation in said predetermined characteristic, and said sensing means further comprising information signal generating means for generating a first information signal in response to said variations; transmitter means for receiving said first information signal and generating a transmission signal responsive thereto, and transmitting said transmission signal to locations remote said detector station means;
means operatively connected to said transmitter means for repetitively providing a predetermined on-time period and a predetermined off-time of said transmitter, and said transmission signal generated during said on-time period;
receiving station means spaced from said predetermined location for receiving said transmission signal and generating at least one output signal in response thereto.

4,058,803

DUPLEX IONIZATION-TYPE FIRE SENSOR

Andreas Scheidweiler, Stafa-Uerikon, Switzerland, assignor to Cerberus AG, Mannedorf, Switzerland

Filed Mar. 15, 1976, Ser. No. 666,645
Claims priority, application Switzerland, Feb. 6, 1976, 1469/76
Int. Cl.[2] G08B *17/10*
U.S. Cl. 340—237.5 12 Claims



1. Ionization-type fire sensor to supervise a predetermined space for the presence of fire or smoke therein comprising

means forming a first, bipolar ionization chamber (B) which changes its electrical resistance upon change of concentration of smoke or fire aerosols in the atmosphere in said space, having

a first pair of spaced electrodes

and bipolar ion generating means in said chamber to ionize the atmosphere in said space which penetrates said chamber,

said bipolar ion generating means being positioned with respect to said first electrode pair to result in ions of both positive and negative polarity in essentially the entire space between said first pair of electrodes to provide an ion current flow between the electrodes of the pair generated essentially by ions of both said polarities upon application of a potential between said first pair of electrodes

said means defining the chamber forming a baffle means (**15, 25**) to prevent direct flow of stream of atmosphere in said space through said chamber and to slow or brake such flow there across;

means forming a second unipolar ion chamber (U) changing its electrical resistance upon change of concentration of smoke or first aerosols in the atmosphere in said space having

a second pair of spaced electrodes

and unipolar ion generating means in said chamber to ionize atmosphere in said space penetrating said chamber, said unipolar ion generating means being positioned with respect to said second spaced pair of electrodes to result in ions of only one polarity in at least a portion of the space between said second pair of electrodes to provide for ion current flow between the electrodes of said second pair of electrodes essentially generated by ions of a single polarity upon application of a potential between said second pair of electrodes,

said means defining said second, unipolar chamber being formed with apertures (**16, 26**) to permit direct flow or stream of atmosphere into and through the space defined by said chamber;

a reference ionization chamber means (R) having two separate inputs, each input being connected to a respective ionization chamber (U, B);

a common support (**11, 21**) for said first, bipolar ionization chamber (B), said second, unipolar ionization chamber (U) and said reference ionization chamber means (R);

and a utilization sensing and threshold circuit means comprising two threshold circuits, each threshold circuit being connected to a respective junction between the respective ionization chamber and the respective reference ionization chamber, the threshold circuits sensing change in resistance of either, or both said chambers and providing an output signal when the resistance of at least one of said chambers rises above a predetermined threshhold level.

4,058,804

SIGNAL MONITORING SYSTEM

Fred H. Sawada, Scotia; Frank M. Klementowski, Saratoga Springs, and James S. Bishop, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 11, 1976, Ser. No. 666,150
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—248 A **4 Claims**

1. A generator brush monitor adapted to provide a signal upon the occurrence of generator brush arcing voltages exceeding a predetermined value and comprising:

a. means receiving a voltage signal including high frequency information signals representative of generator brush arcing and low frequency signals representative of the generator voltage and various harmonics thereof as well as possible recurrent high frequency noise spikes in the same frequency band as said information signals;

b. filter means for filtering said low frequency signals from said received voltage signal;

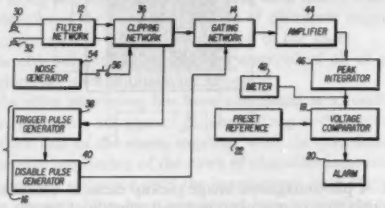
c. clipping means for removing excess positive-going and negative-going peaks of said information signals;

d. means for adjusting the level of said information signals to which said monitor is responsive;

e. gating means receiving the filtered and clipped information signals and adapted to pass said information signals unless said gating means is in receipt of a disabling signal, but only for substantially the duration of said disabling signal and its ringing;

f. means responsive to the output of said gating means to amplify and integrate said gated signal;

g. means responsive to said amplified and gated information signal for comparing the same with an adjustable refer-



ence voltage for producing an alarm signal when said information signal exceeds the adjusted value of said reference voltage;

h. means coupled to said clipping means for providing a disable pulse and to maintain the same substantially so long as a noise signal and its ringing is present in said input voltage signal and to supply said disable pulse to said gating means;

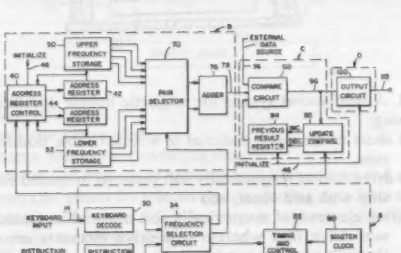
i. said gating means being further adapted to gate said information signal so long as said disable pulse is input thereto but only substantially for such period so that said monitor is operative to receive and act in response to said information signals except when it is in receipt of a noise signal in the same frequency band as said information signals.

4,058,805

DIGITAL MULTITONE GENERATOR FOR TELEPHONE DIALING

Don W. Lake, Cupertino, Calif., assignor to Comdial Corporation, San Francisco, Calif.

Filed June 16, 1975, Ser. No. 587,453
Int. Cl.[2] H03K *13/02*; H04B *1/00*
U.S. Cl. 340—347 DA **20 Claims**



1. A digital signal generator for selectively constructing an analog waveform approximation from digitally encoded amplitude information representing a number of such waveforms comprising:

data source means for providing said digitally encoded amplitude information in the form of at least one sequence of data words, said data source including storage means for containing said amplitude information and addressing

means associated with said storage means for selectively accessing said amplitude information;

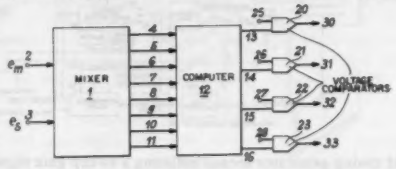
comparator means responsive to said sequence of data words for providing a digital pulse train describing the relative magnitude of successive data words; and

output means responsive to said comparator output for transforming said digital pulse train into said analog waveform approximation.

4,058,806
ANALOG/DIGITAL CONVERTER

Morton Nadler, 17 Les Huppes 78170 La Celle Saint Cloud, France

Filed Mar. 18, 1976, Ser. No. 668,192
Claims priority, application France, Apr. 2, 1975, 75.10216
Int. Cl.² H03K *13/175*
U.S. Cl. 340—347 AD **9 Claims**



1. A process for analog to digital conversion using a Gray digital code, wherein one at least of the bits of the digital code is obtained by:

supplying to a channel a number p of intermediate signals generated from an analog signal e_s to be converted and a reference signal e_m of fixed value equal to the maximum excursion of said analog signal, with p being a power of 2 and at least equal to 4,

wherein a first half of said intermediate signals are formed by a series of $p/2$ successive direct signals having successive respective values equal to $e_s - ke_m$ with k uniformly increasing from 0 by equal increments of $2/p$, and a second half of said intermediate signals are formed by a series of $p/2$ successive inverse signals having successive respective values equal to $k'e_m - e_s$, with k' gradually increasing from $2/p$ by equal increments of $2/p$,

associating each successive direct signal with each successive inverse signal, thereby forming $p/2$ successive pairs of intermediate signals,

determining in each pair the signal of minimum value,

thereafter determining the signal of maximum value among all signals of minimum value from the various pairs,

and comparing said signal of maximum value with a threshold signal having a fixed value equal to $e_m/2p$.

4,058,807
DIGITAL ANTILOGARITHMIC CONVERTER CIRCUIT

Masaru Yamazaki, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Apr. 15, 1976, Ser. No. 677,418
Claims priority, application Japan, June 24, 1975, 50-76539
Int. Cl.² H03K *13/20*
U.S. Cl. 340—347 DA **1 Claim**

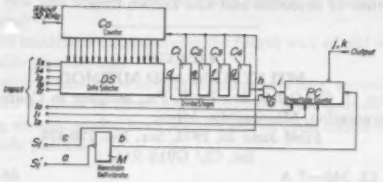
1. A circuit for receiving logarithmically converted digital information and producing a signal having a period in reverse proportion to an antilogarithmic value of said digital information comprising:

a counter for counting a clock pulse of a predetermined frequency to provide various divided frequencies;

a data selector for receiving the number more than decimal point of the digital input information and selecting a particular one of the various divided frequencies from said counter in accordance with the received number;

a divider for dividing the selected frequency from said selector to provide a signal having a period related to the antilogarithmic value of the number more than the decimal point of the input information;

an AND circuit having two inputs connected to the input and output of said divider, respectively; and

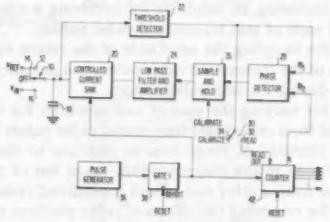


a presettable counter which is presetted to the number less than the decimal point of the input information by a start signal and for then receiving as clock pulses the output pulses from said AND circuit to produce an output signal having a period in reverse proportion to the antilogarithmic value of the input information.

4,058,808
HIGH PERFORMANCE ANALOG TO DIGITAL CONVERTER FOR INTEGRATED CIRCUITS

Shashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 489,024, July 6, 1974, abandoned. This application Mar. 21, 1977, Ser. No. 779,668
Int. Cl.² H03K *13/02*
U.S. Cl. 340—347 AD **15 Claims**



1. An analog to digital converter for converting an unknown analog input voltage into a digital equivalent thereof including a calibration means comprising:

a. storage means,

b. means for applying said input voltage to said storage means,

c. means for altering the charge held by said storage means by discrete equal amounts in response to control pulses applied to said means for altering,

d. means for applying control pulses to said means for altering,

e. threshold means connected to said storage means for detecting when the charge on said storage means reaches a predetermined threshold value,

f. accumulator means responsive to the said control pulses for accumulating a number of corresponding to the voltage applied to said storage means,

g. means for applying a reference voltage to said storage means the resulting charge held by said storage means means again being altered in discrete equal amounts by said means for altering, and

h. means, responsive to said threshold means and said accumulator means and connected to said means for altering, for comparing the time of detection of said predetermined threshold by said threshold means with a known time

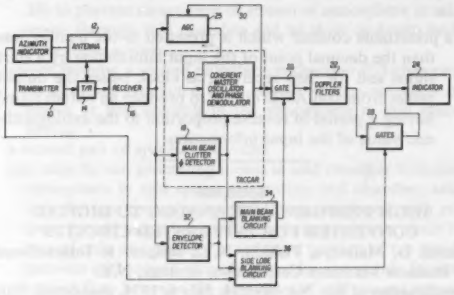
corresponding to a number of control pulses nominally required for varying the charge held by said storage means from its initial value when said reference voltage is applied thereto to a value corresponding to said predetermined threshold value, and for varying said discrete amount in accordance with the difference between said time of detection and said known time.

4,058,809

MTI SYSTEM AND METHOD

Walter H. Chudleigh, Jr., Paoli, Pa., assignor to Control Data Corporation, Minneapolis, Minn.

Filed June 26, 1972, Ser. No. 278,488
Int. Cl.[2] G01S 9/42
U.S. Cl. 343—7 A **66 Claims**



1. A radar system comprising:
means for transmitting a succession of radar pulses separated by an interpulse period;
means including an amplifier for receiving a return signal from each of said transmitted radar pulses;
means for sampling the amplitude of the return signal from each of the transmitted radar pulses in a plurality of range bins during the interpulse period;
means for varying the gain of said amplifier for the return signal from one of said transmitted radar pulses in each of said plurality of range bins in response to the sampled amplitude in the corresponding range bin of the return signal from a prior one of said transmitted radar pulses;
means for removing the effects of radar platform movement from the main beam targets;
a bank of doppler filters;
an indicator;
means for detecting targets in the main beam having an amplitude exceeding a predetermined value;
means for effectively inhibiting selected ones of said doppler filters in response to said main beam target detecting means;
means for tracking targets detected in the main beam and having sufficient reflective power to override side lobe attenuation;
means for calculating the residual doppler frequency of said targets resulting from side lobe rather than main beam detection; and,
means responsive to said calculating means for inhibiting selected ones of said doppler filters corresponding to the calculated doppler frequency for the range of said targets.

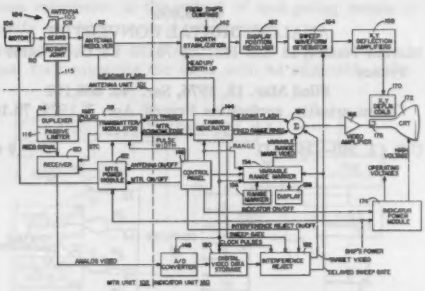
4,058,810

STABILIZED DIGITAL PPI RADAR SYSTEM

Joseph E. Bryden, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 13, 1976, Ser. No. 714,051
Int. Cl.[2] G01S 7/28
U.S. Cl. 343—17.1 R **8 Claims**

1. A radar system comprising in combination:
timing generator means for initiating production of radar pulses;
means for transmitting said radar pulses in response to said initiating means;
means for producing an acknowledge signal having fixed time relationship to said transmitted radar pulses;
means for receiving returned radar signals; and
means for producing a visual display responsive to the received returned radar signals;



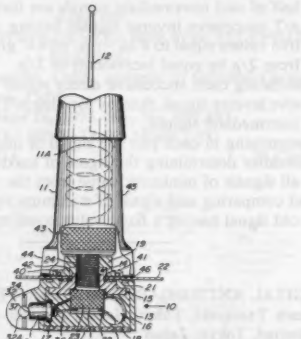
said timing generator means initiating a sweep gate signal for synchronizing the start of the visual sweep of said display in response to said acknowledge signal, whereby the acknowledge signal has a fixed time relationship with the commencement of each of said transmitted radar pulses to prevent jitter between the start of the visual sweep and returns of said radar pulses.

4,058,811

ENCAPSULATED BASE FOR WHIP ANTENNA

Robert C. Gauss, and Lynn D. Wills, both of Schaumburg, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 22, 1976, Ser. No. 668,994
Int. Cl.[2] H01Q 1/32, 1/50
U.S. Cl. 343—715 **6 Claims**



1. A base member for coupling to an antenna whip comprising, a metallic housing, a contact member having one part extending upwardly from said housing for coupling to said antenna whip and a second part extending into the interior of said housing, an insulating member separating said one part from said housing, a capacitor interiorly of said housing and having one lead connected to the second part of said contact member for impedance matching, said housing having an opening for receiving signal conducting means, signal conducting means having an extension projecting through said opening into said housing and including a ground conductor and a signal conductor, said signal conductor being connected to said second part interiorly of said housing and said ground

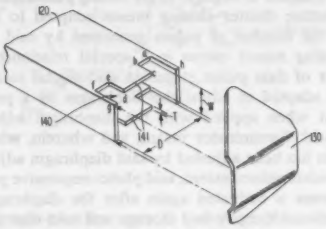
conductor being connected to said housing interiorly thereof, said capacitor having a second lead connected to said housing interiorly thereof, and insulating means encapsulating said capacitor, said second part, said signal conducting extension and the connections interiorly of said casing.

4,058,812

DISH ANTENNA WITH IMPEDANCE MATCHED SPLASH PLATE FEED

David L. Stanislaw, Hatfield, Pa., assignor to Aradar Corporation, Ambler, Pa.

Filed May 3, 1976, Ser. No. 682,766
Int. Cl.[2] H01Q *19/14*
U.S. Cl. 343—761 **5 Claims**



1. A microwave antenna system comprising:

a. a concave reflective antenna member having a finite focus, said member being pivotable through a predetermined angle;

b. means for supplying microwave energy to, and for receiving microwave energy from said reflector, said means being positionally fixed relative to said member and including a splash plate having a pair of oppositely directed wing portions inclined toward said member, and a wave guide of generally rectangular cross section having a first input/output end penetrating said member, and a second end at the focus point of said member, said second end being in connected abutment with said splash plate, said wave guide defining a pair of apertures on opposite surfaces thereof, opening said wave guide toward said wing portions substantially at said abutment, therby forming means for focusing energy between said wave guide and said member via said apertures; and

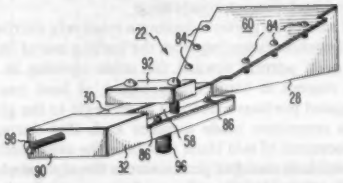
c. first and second impedance matching means, each being substantially coplanar with a different one of said opposite surfaces and each partially occluding an associated one of said apertures, said impedance matching means promoting the VSWR of said antenna system throughout the pivot range of said member.

4,058,813

SHEET METAL WAVEGUIDE HORN ANTENNA

John Joseph Risko, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 18, 1976, Ser. No. 667,948
Int. Cl.[2] H01Q *13/02*
U.S. Cl. 343—786 **5 Claims**



1. A microwave energy waveguide horn antenna having a tapered horn portion of rectangular cross-section attached at its narrower end to a straight waveguide portion of rectangular cross-section, comprising:

a first section defining three walls of said horn portion;

a second section defining three walls of said waveguide portion and the fourth wall of said horn portion;

said first and second sections being formed of folded sheet metal;

a third metallic section defining the fourth wall of said waveguide portion; and

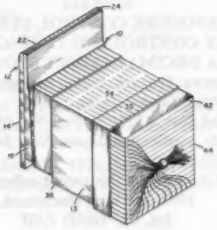
fastening means for attaching together said first, second and third sections to form said waveguide horn antenna having an open-ended horn portion and an open-ended waveguide portion.

4,058,814

ELECTROGRAPHIC WRITING SYSTEM WITH DIODE SWITCHING ASSEMBLY

Arling Dix Brown, Jr., Cleveland Heights, and Edward Justus Reilly, Mayfield Heights, both of Ohio, assignors to Gould, Inc., Cleveland, Ohio

Filed Mar. 29, 1976, Ser. No. 671,427
Int. Cl.[2] G03G *15/044*
U.S. Cl. 346—154 **14 Claims**



1. An electrographic writing system comprising:

an electrographic writing head including a plurality of styluses operatively connected to a switching system;

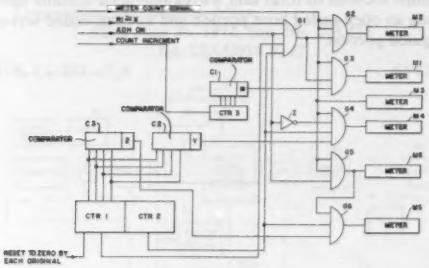
the switching system including at least one diode assembly, each diode assembly including a plurality of diode switching circuits controlling the voltage of the plurality of styluses, each of diode switching circuits including a first diode, a charge storage means operatively connected thereto and a stylus operatively connected to the storage means, drive means for generating a forward voltage across the diode assembly which causes a current flow through the first diode if the first diode is in a diode switching circuit that is set up, the drive means subsequently generating a reverse input across the first diode and the charge storage means which causes a reverse current through the first diode which charges the storage means so that the stylus reaches and maintains a voltage for a time sufficient to charge a record medium; and

means for setting up the diode switching circuits in order to determine which diode switching circuits may conduct current.

4,058,815
METERING SYSTEM FOR A COPIER/DUPLICATOR MACHINE

George M. Warner, Cheltenham, and Leif E. Andberg, London, both of England, assignors to Rank Xerox Ltd., London, England

Filed Sept. 30, 1974, Ser. No. 511,844
Claims priority, application United Kingdom, Jan. 25, 1974, 03473/74
Int. Cl.² G03G 15/00
U.S. Cl. 355—14 6 Claims



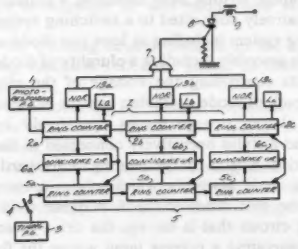
1. An improved metering system for a reproduction machine capable of operating either in an automatic document handling mode in which during a job a required number of prints are automatically made from each one of a stack of originals, or a manual mode, wherein the improved metering system comprises;

a. means for counting the number of originals per job up to a predetermined first number;
b. means for counting the total number of originals fed into the machine; and
c. means for counting the total number of prints made.

4,058,816
CAMERA EXPOSURE CONTROL SYSTEM HAVING DIGITALLY CONTROLLED TIMING CIRCUITRY INCLUDING A DECIMAL COUNT STORING MEMORY

Tsukumo Nobusawa, Oizumi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed Nov. 17, 1975, Ser. No. 632,195
Claims priority, application Japan, Nov. 26, 1974, 49-136424; Aug. 15, 1975, 50-98479
The portion of the term of this patent subsequent to July 13, 1993, has been disclaimed.
Int. Cl.² G03D 7/08
U.S. Cl. 354—23 D 1 Claim

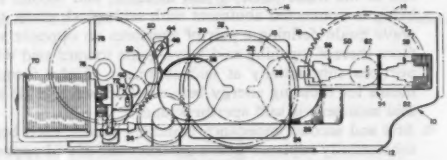


1. Apparatus for automatically controlling a camera exposure operation, the apparatus comprising: means for generating data pulses by the number according to light intensity of an object to be photographed, preset diaphragm value and film sensitivity prior to opening of the camera shutter; digital memory means of decimal type adapted to be applied with and store the data pulses so as to accumulate a decimal count of the number of these data pulses, the digital memory means including a plurality of registers each for storing a respective one of unit and higher decimal place portions of the decimal count; discriminator means adapted to discriminate whether the decimal count stored in said decimal digital memory means is within a predetermined range or not after completion of the data pulse storage in said decimal digital memory means, being further adapted to output a shutter opening signal when said stored decimal count is within said predetermined range, and to output a diaphragm adjusting signal together with a reset signal for said digital memory means when said stored decimal count is out of said predetermined range; means adapted to be applied with the shutter opening signal from said discriminator means and thereby to open the shutter; timing-pulse generating means adapted to begin to apply timing pulses after opening of the shutter; shutter closing means adapted to be activated when the number of pulses generated by said timing-pulse generating means comes in a special relationship with the number of data pulses stored in said digital memory means; means adapted to adjust the diaphragm by a predetermined amount when applied with the diaphragm adjusting signal from said discriminator means, and wherein, when the diaphragm has been adjusted by said diaphragm adjusting means to a predetermined extent, said photo-responsive pulse generating means is activated again after the diaphragm has been stopped and thereby said storage and said discrimination are repeated.

4,058,817
PHOTOGRAPHIC EXPOSURE APPARATUS FOR PROVIDING SMALL APERTURES

Bruce K. Johnson, Andover; Irving Laskin, Sharon, and George D. Whiteside, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1976, Ser. No. 646,286
Int. Cl.² G03B 7/14
U.S. Cl. 354—26 19 Claims



1. In a photographic exposure control system for defining an aperture value in operative relation to a given optical path, a blade mechanism comprising a pair of blade members having a given blade axis, each of said blade members having an open portion therein with at least a main section thereof lying on the axis of its respective blade member, said main sections exceeding at some point a given width as measured transverse to the blade axis, means for mounting said blade members for displacement across said given optical path along a blade path in which said blade axes are maintained in a substantially parallel relation to provide at least partial coincidence of said openings at said given optical path thereby defining an operative aperture value thereat in accordance with the extent of said coincidence, the improvement comprising:

each of said open portions having a relatively narrow, elongated portion extending from the leading end of its respective open portion toward the other opening as viewed with respect to blade displacement, at least one of said elongated portions extending at an angle to the given axis of its respective blade member such that during initial displacement of said blade members, the elongated portion of one blade member passes across the elongated portion of the other blade member and then out of coincidence therewith at said optical path to define a relatively small initial aperture value thereat as compared to the relatively

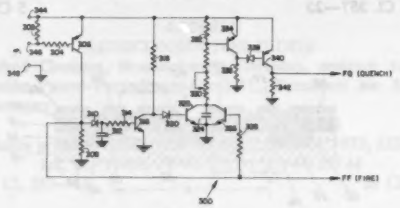
large aperture value when the main sections of each open portion are brought into increasing coincidence.

4,058,818

FIXED TIME DELAY QUENCH STROBE

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 8, 1976, Ser. No. 674,840
Int. Cl.² G03B *7/16*
U.S. Cl. 354—33 **9 Claims**



7. Lighting apparatus for use with a photographic camera of the type having means for providing at least two control signals in sequence during the course of a photographic interval, said lighting apparatus comprising:

a source of artificial illumination;

means for accommodating at least one electrical connection from said lighting apparatus to the camera in order to facilitate the transmission of the two signals from the camera to said lighting apparatus;

means for coupling to a source of electrical energy; and

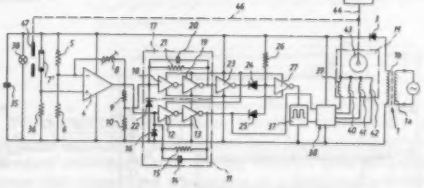
means energizable by the source of electrical energy, and responsive to the first of the two signals from the camera for initiating the energization of the source of artificial illumination to effect the firing thereof, and then responsive to the second of the two signals from the camera for initiating the deenergization of the source of artificial illumination immediately subsequent to the expiration of a time delay of predetermined duration, said time delay commencing immediately after receipt of the second of the two signals from the camera.

4,058,819

ANALOG/DIGITAL CONTROL ARRANGEMENT FOR PHOTOGRAPHIC APPARATUS

Alois Rieder, Munich, Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Germany

Division of Ser. No. 537,668, Dec. 30, 1974, Pat. No. 3,972,607. This application June 3, 1975, Ser. No. 583,503
Int. Cl.² G03B *7/08*
U.S. Cl. 354—44 **9 Claims**



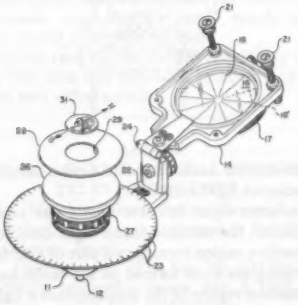
1. In a photographic device including an adjustable component, a regulating arrangement for effecting light-dependent regulation of the setting of an adjustable component, the regulating arrangement comprising, in combination, means for generating a light-dependent signal, including a bridge circuit comprised of at least one photosensitive element, the bridge circuit being balanced, imbalanced in one direction or imbalanced in the other direction in dependence upon the light incident upon the photosensitive element, and a difference amplifier having two inputs connected across diagonally opposite junctions of the bridge circuit, the difference amplifier producing at its output a voltage constituting the light-dependent signal; first and second bistable circuit stages each having its input connected to the output of the difference amplifier, each of the bistable circuit stages having a respective threshold voltage, each of the bistable circuit stages assuming a first state when the difference amplifier output voltage applied to its input is below its threshold voltage and a second state when the difference amplifier output voltage applied to its input is above its threshold voltage, the threshold voltages of the two bistable circuit stages having values such that when the bridge circuit is balanced the value of the difference amplifier output voltage is intermediate the values of the threshold voltages of the two bistable circuit stages; electromagnetic adjusting means activatable in a first direction to change the setting of the adjustable component in one direction and activatable in the opposite second direction to change the setting of the adjustable component in the opposite direction; activation-determining means connected to both bistable circuit stages and to the electromagnetic adjusting means, and operative for assuming in dependence upon the combination of the states of the two bistable circuit stages either a state permitting activation of the adjusting means or a state preventing activation of the adjusting means; and direction-selecting means connected to the first bistable circuit stage and to the electromagnetic adjusting means, operative for assuming a state setting the adjusting means for activation when the first bistable circuit stage is in its first stage and independently of the state of the second bistable circuit stage, and operative for assuming a state setting the adjusting means for activation in the opposite direction when the first bistable circuit stage is in its second state and independently of the state of the second bistable circuit stage.

4,058,820

COINS ORGANIZED IDENTIFICATION NUMBERING SYSTEM APPARATUS AND METHOD

Merritt Leroy Hollen, 1712 Notre Dame Ave., Belmont, Calif. 94002

Filed June 28, 1976, Ser. No. 700,317
Int. Cl.² G07F *3/02*; G03B *29/00*
U.S. Cl. 354—80 **14 Claims**



8. Apparatus for supporting a coin to obtain a photographic record thereof comprising a support base, a table mounted for rotational movement on said support base, means for indicating the angular position of said table relative to said support base, means for mounting the coin on said table, means for providing a predetermined array of reticle lines, a holder for supporting

said predetermined array of reticle lines for rotational movement therein, said holder being disposed for positioning into and out of a position overlying said means for mounting the coin, whereby a mounted coin photographed through said array of reticle lines provides a photoidentification record with the coin oriented in accordance with the rotational movement of said table, and the reticle lines superimposed thereon in accordance with the rotational movement of said means providing the predetermined array of reticle lines.

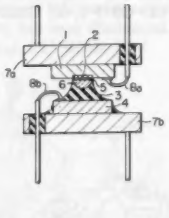
10. A method of identifying coins for cataloging, comprising the steps of orienting a support platform relative to an angular reference, orienting the coin in predetermined position on the platform, superimposing an identifying reticle display on the coin, rotating the reticle display to a predetermined reticle position, rotating the platform to a predetermined platform position orienting a camera relative to the angular reference to view the coin, photographing the coin, and identifying the photograph with indicia signifying the reticle display rotation, the reticle display identification, and the platform rotation, whereby identifying marks on the coin face are located and recorded for registration.

4,058,821

PHOTO-COUPLER SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Tadahiko Miyoshi, Hitachi; Yasutoshi Kurihara, Katsuta; Tatsuya Kamei, and Takuzo Ogawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 19, 1976, Ser. No. 668,404
Claims priority, application Japan, Apr. 2, 1975, 50-39155
Int. Cl.² H01L *31/12*
U.S. Cl. 357—19 **17 Claims**



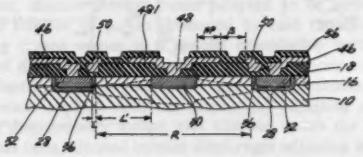
1. A photo-coupler semiconductor device comprising:
a semiconductor light emitter;
a semiconductor light detector facing the semiconductor light emitter, the semiconductor light detector having a light sensitive region formed in a part of a surface thereof;
a transparent glass layer formed on the entire surface of the light sensitive region of the semiconductor light detector, the transparent glass layer essentially containing SiO_2; and
a transparent optical guide interposed between the semiconductor light emitter and the semiconductor light detector for directing light from the semiconductor light emitter to the light sensitive region, at least a part of the optical guide close to the light sensitive region including a glass portion one surface of which intimately contacts a surface of the transparent glass layer.

4,058,822

HIGH VOLTAGE, LOW ON-RESISTANCE DIFFUSION-SELF-ALIGNMENT METAL OXIDE SEMICONDUCTOR DEVICE AND MANUFACTURE THEREOF

Katunobu Awane, Ikoma; Hironori Hattori, Suita; Tetuo Biwa, and Hiroshi Tamaki, both of Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed June 1, 1976, Ser. No. 691,874
Claims priority, application Japan, May 30, 1975, 50-66200; June 20, 1975, 50-76134; Jan. 6, 1976, 51-1221
Int. Cl.² H01L *29/78, 27/02, 29/04*
U.S. Cl. 357—23 **5 Claims**



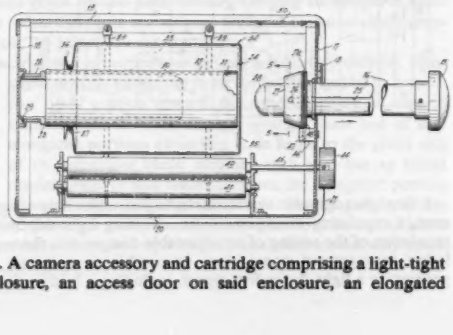
1. A metal oxide semiconductor device of the diffusion-self-alignment type comprising:
a. a semiconductor body having a conductivity of one type;
b. a drain region having a conductivity opposite that of the semiconductor body;
c. a source region having a conductivity opposite that of the semiconductor body;
d. a channel region of the same conductivity type as the semiconductor body, said channel region being formed to surround the source region through the use of a double diffusion technique;
e. a drift channel region of the opposite conductivity type to that of the semiconductor body, said drift channel region being formed on the surface of the semiconductor body to extend between the drain and the channel regions;
f. a drain electrode connected to the drain region;
g. a source electrode connected to the source region;
h. a gate electrode formed above the channel region via a thin insulating layer; and
i. field plate means including a portion of said drain electrode extending toward said gate electrode to cover substantially one-half of said drift channel region via a thick insulating layer.

4,058,823

CAMERA ACCESSORY AND CARTRIDGE

Roger Mitchell, Minneapolis, and William H. Strater, Bloomington, both of Minn., assignors to Visual Graphics Corporation, New York, N.Y.

Filed Apr. 8, 1976, Ser. No. 674,824
Int. Cl.² G03B *17/26*
U.S. Cl. 354—354 **8 Claims**



1. A camera accessory and cartridge comprising a light-tight enclosure, an access door on said enclosure, an elongated

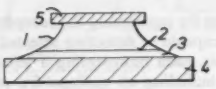
plunger carried by the door and slideable therethrough from the exterior to the interior of said enclosure, a hollow mandrel secured within the enclosure and extending in the direction of the access door and coaxial with the plunger, a cartridge comprising a hollow core, a supply of photosensitive material carried upon the core, a light impervious bag having a closed and an open end overlying the said light impervious material, means to secure the open end of the bag to the core in light-tight contact with said core, said cartridge being slideably received upon said mandrel, and means within the housing to advance the photo-sensitive material through an exit slot in the light-tight enclosure.

4,058,824

SEMICONDUCTOR DIODE

Manfred Claassen, Braunschweig, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed May 16, 1973, Ser. No. 361,303
Claims priority, application Germany, May 18, 1972, 2224159
Int. Cl.² H01L *29/48, 29/06, 23/48, 29/44*
U.S. Cl. 357—15 **21 Claims**



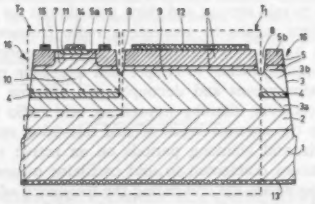
1. In a semiconductor delay diode comprising a semiconductor body of a first conductivity type, means, adjacent one surface of said body and including a rectifying junction, for providing a space charge region in said body, and a blocking electrode for minority carriers adjacent the opposite surface of said semiconductor body, the improvement wherein the doping of said semiconductor body and the spacing between said blocking electrode and said junction are such as to extend the space charge region of said diode up to said blocking electrode in the operational state.

4,058,825

COMPLEMENTARY TRANSISTOR STRUCTURE HAVING TWO EPITAXIAL LAYERS AND METHOD OF MANUFACTURING SAME

Maurice Bonis, Herouville, and Bernard Roger, Carpiquet, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 24, 1975, Ser. No. 644,065
Claims priority, application France, Jan. 10, 1975, 75.00713
Int. Cl.² H01L *27/02, 27/10, 29/06*
U.S. Cl. 357—46 **12 Claims**



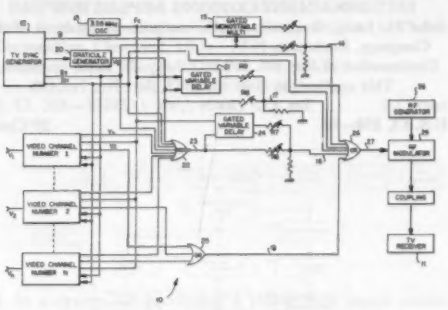
1. A semiconductor device having a substantially planar semiconductor body including at least first and second complementary transistors each having emitter, base and collector zones and comprising a substrate of a first conductivity type which is covered with a first epitaxial layer of a second conductivity type opposite to that of the first, at least a part of said substrate comprising the collector zone of the first transistor, the base zone of said first transistor and the collector zone of the second complementary transistor comprising adjacent, electrically connected parts of said first epitaxial layer, and a second epitaxial layer of said first conductivity type provided on the first epitaxial layer and the emitter zone of the first transistor and the base zone of the second transistor comprise portions of said second epitaxial layer, said portions of the second epitaxial layer being separated from each other by at least one groove having a sufficient depth to extend through said second epitaxial layer entirely and to extend only partially into said first epitaxial layer, and an emitter zone of said second transistor formed in that part of said second epitaxial layer constituting the base zone of said second transistor, and means for providing circuit connections to zones of the first and second transistors.

4,058,826

METHOD AND SYSTEM FOR GENERATING OSCILLOGRAPHIC DISPLAYS OF ANALOG SIGNALS UPON A TV

Seymour Schneider, 27 Collamore Terrace, West Orange, N.J. 07052

Filed Apr. 15, 1976, Ser. No. 677,432
Int. Cl.² H04N *9/62*
U.S. Cl. 358—10 **16 Claims**



1. A method for generating an oscillographic display of at least one periodic or aperiodic input signal upon a standard television receiver with said input signal being generated external of said receiver and being independent of the television receiver raster frequency, comprising the steps of:

storing said input signal in a multiplicity of storage elements with each element being responsive to said input signal at a different moment in time;

initiating said storage in synchronism with said input signal;

controlling the rate at which said input signal is stored in said storage elements independent of the input signal rate;

reading the signals stored in said storage elements at a rate in synchronism with the horizontal synchronization frequency of said television receiver;

converting the read signals into corresponding video signals compatible with said television receiver; and

displaying said video signals.

4,058,827

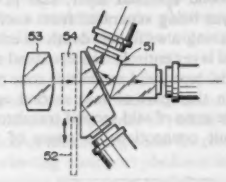
COLOR SEPARATING OPTICAL SYSTEM FOR A TELEVISION CAMERA

Kunio Ando, Warabi; Takemi Saito, Kawagoe, and Takeshi Higuchi, Tokyo, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Mar. 26, 1976, Ser. No. 671,024
Claims priority, application Japan, Apr. 2, 1975, 50-40075
Int. Cl.² H04N *9/09*
U.S. Cl. 358—55 **4 Claims**

1. In a color separating optical system for a television camera comprising a color separating optical system composed of a plurality of prisms provided between an objective and one or more television image pick-up tubes, the improvement wherein means is provided for inserting between said prism and said objective any one of a plurality of glass elements having paral-

lel flat sides and of different thicknesses, wherein the thickness of each said glass element is determined in relation to a particu-



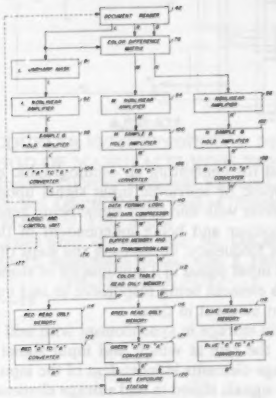
lar type of image pick-up tube, whereby insertion of a glass element adjusts the glass length of the optical system to the requirements of a particular type of pick-up tube.

4,058,828

DOCUMENT COPYING APPARATUS

John H. Ladd, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 580,632, May 27, 1975, abandoned.
This application Nov. 11, 1976, Ser. No. 740,699
Int. Cl.² H04N *1/46, 1/26*
U.S. Cl. 358—80 **20 Claims**



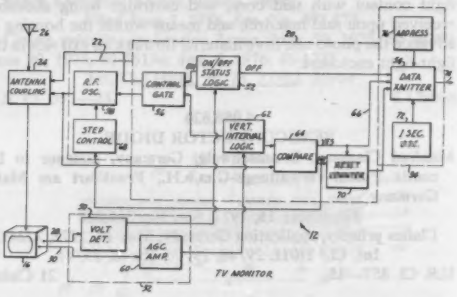
1. In a document copying apparatus of the type including (1) reading means for generating a plurality of electrical signals which are serial measures of imagewise information of successive discrete areas of an original document to be reproduced, (2) image recording means responsive to applied electrical signals for forming discrete image portions on a receiver medium corresponding to the imagewise information contained in said applied electrical signals, and (3) control means associated with said reading means and said recording means for controlling the format of the recording of said discrete image portions so that the relative position of each such image portion on the receiver medium corresponds to the relative position of its respective counterpart area of the original document; the improvement comprising programmed computation means for (1) receiving said generated signals, (2) applying a compensating function to said generated signals to modify the imagewise information contained therein and (3) applying the compensated signals to said image recording means; said computation means including means for enhancing the color information in said generated signals by correcting for characteristics of the colorant set in the original document.

4,058,829

TV MONITOR

John R. Thompson, Los Angeles, Calif., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Aug. 13, 1976, Ser. No. 714,432
Int. Cl.² H04N *7/02*
U.S. Cl. 358—84 **13 Claims**



1. In a system for monitoring the reception status of a television receiver capable of detecting selected ones of a plurality of wave signals, each representing a separate video channel, said receiver including an antenna for receiving said wave signals, a horizontal retrace circuit and a kinescope circuit, monitoring apparatus comprising: first probe means connected to said horizontal retrace circuit for detecting a voltage in said horizontal retrace circuit; second probe means connected to said kinescope circuit for detecting a signal frequency in said kinescope circuit; voltage level detector means connected to said first probe means for detecting a predetermined level of the voltage on said first probe means; first logic means connected to said voltage level detector means for providing a first gate signal when said voltage level detector means detects a voltage on said first probe means less than said predetermined level and providing a second gate signal when said level detector means detects a voltage on said first probe means equal to or greater than said predetermined level; second logic means connected to said second probe means for providing a first signal representative of the signal frequency detected by said second probe means and providing a third gate signal between successive horizontal blanking periods on an active video line of said kinescope circuit; oscillator means for selectively generating one of a plurality of radio frequency signals within the bandwidth of the wave signals representative of separate video channels, antenna coupling means for selectively coupling said television receiver to said antenna and to said oscillator means; gate means connected to said first and second logic means and to said oscillator means and said antenna coupling means and responsive to said second and third gate signals for operating said oscillator means to generate a radio frequency signal within the bandwidth of a channel and for operating said antenna coupling means to couple said television receiver to said oscillator means and decouple said antenna from said television receiver, thereby impressing said radio frequency signal onto the antenna input of said television receiver between horizontal blanking periods on an active video line; compare means connected to said oscillator means and said second logic means for comparing the frequency of the signal generated by said oscillator means with said first signal representative of the signal frequency detected by said second probe means; control means connected to said compare means and to said oscillator means and responsive to a non-coincidence of signals compared by said compare means for controlling said oscillator to generate another radio frequency signal upon the next operation of said gate means; and transmitter means connected to said first logic means and to said compare means and responsive to said first gate signal for transmitting status data indicative that said television receiver is in an "off" condition, and responsive to a coincidence of signals compared by said

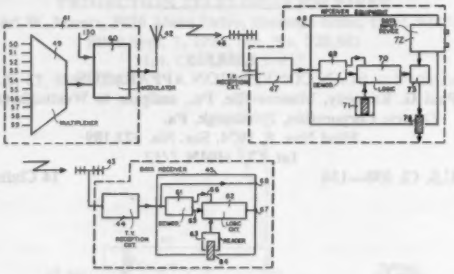
compare means for transmitting status data indicative that said television receiver is in an "on" condition and indicative of the channel to which said television receiver is tuned.

4,058,830

ONE WAY DATA TRANSMISSION SYSTEM

Yves Maurice Guinet, 31, Rue de Fougeres, Rennes, France (35000), and Yves Maurice Noirel, Le Chesnot-Breteil, Montfort, France (35160)

Filed June 3, 1976, Ser. No. 689,493
Claims priority, application France, June 6, 1975, 75.18319
Int. Cl.[2] H04N *1/32, 1/34, 1/44*
U.S. Cl. 358—86 8 Claims



1. An one-way data transmission system wherein
the transmitter station transmits data in the form of data packs, from a plurality of channels, the data packs from said plurality of channels are time multiplexed, each data pack comprises a prefix coded signal, in addition to the conventional synchronization and service signals, wherein
one channel amongst the plurality of channels is allotted to the transmission of a date information, each receiver equipment comprising means for comparing each pack prefix code with a channel code stored in a dead memory,
each dead memory containing in addition to the channel code, a subscription period information, said receiver equipment comprising means for receiving the date channel information from the date channel and comparing said date channel information with the subscription period information stored in the dead memory and which, when the comparison result is positive, delivers a first validation signal, and
said means for comparing the prefix code to the dead memory channel code and delivering a second validation signal when the second comparison result is positive,
the first and second validation signals being combined for validating the received pack having caused the second validation signal.

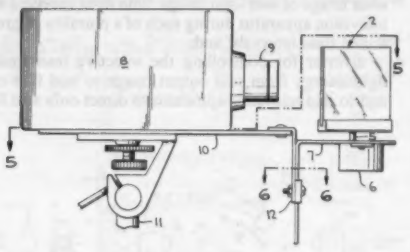
4,058,831

PANORAMIC CAMERA SCANNING SYSTEM

William V. Smith, Memphis, Tenn., assignor to Lectrolarm Custom Systems, Inc., Memphis, Tenn.

Filed Sept. 8, 1976, Ser. No. 721,502
Int. Cl.[2] H04N *5/24*
U.S. Cl. 358—87 10 Claims

1. Mirror system for use in a panoramic camera scanning system comprising:
a planar member having reflective coatings on both of its planar surfaces;
means for rotatably mounting said planar member so that its plane lies along an axis extending in a direction substantially perpendicular to the optical axis of a camera utilized in the scanning system; and,



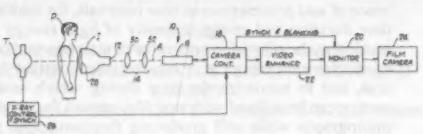
means for rotating said planar member about said mounting axis.

4,058,832

DISPLAY FOR TELEVISION IMAGING SYSTEM

Robert J. Vagi, Broadview Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Mar. 5, 1976, Ser. No. 664,367
Int. Cl.[2] H04M *7/18*
U.S. Cl. 358—110 2 Claims



1. In a system for producing a visible light image corresponding to a pattern of penetrative radiation emergent from a subject, the system including a source for directing penetrative radiation through the subject, means for converting the emergent penetrative radiation pattern to a visible light image, electrical apparatus for converting the visible light image to electrical signals, and a display apparatus including a cathode ray tube having an electron gun for producing an electron beam, an output face and a phosphor layer on the inner surface of the output face, the phosphor layer being disposed for impingement by the electron beam and for emitting light for producing a second visible image representing the pattern of penetrative radiation when the electron beam strikes the phosphor, the improvement comprising:
a. the output face of the cathode ray tube having a substantially planar configuration; and
b. the focal spot of the electron beam having a diameter of no more than about 0.0017 inches at an electron beam current of about 4 microamperes.

4,058,833

RADIATION IMAGING APPARATUS AND METHOD

Fred H. Meyer, Newbury, Ohio, assignor to Picker Corporation, Cleveland, Ohio

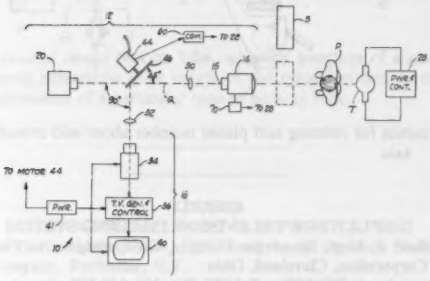
Filed Dec. 31, 1974, Ser. No. 537,776
Int. Cl.[2] H04N *5/32*
U.S. Cl. 358—111 34 Claims

1. A system for deriving diagnostic information about a subject from a pattern of penetrative radiation, said system comprising:
a. a source of directing penetrative radiation at different energy levels along a path through the subject;
b. an image tube for receiving penetrative radiation from the subject and converting such radiation to an output light image representing a pattern of such radiation from said subject;

c. a film camera for receiving said light image for producing photographs thereof;

d. a television apparatus for producing a substantially continuous image of said light image from light received by said television apparatus during each of a plurality of predetermined time intervals; and,

e. a diverter for controlling the selective transmission of light energy from said output image to said film camera and to said television apparatus to direct only said light to



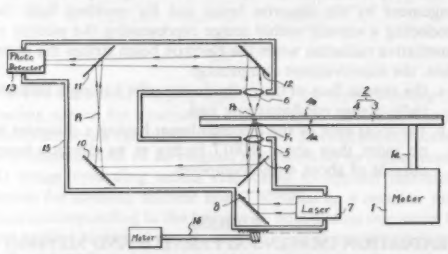
said television apparatus in bursts having a predetermined energy and substantially synchronously with the occurrence of said predetermined time intervals, for limiting the time duration and energy intensity of light energy transmission to the television apparatus to maintain said continuous television image at a substantially constant brightness, and to maximize the time during which said light energy can be utilized with said film camera for producing photographs while still producing the continuous television image.

4,058,834

SYSTEM FOR MAKING A LIGHT BEAM SCAN A FLAT CARRIER WITH AUTOFOCUSING

Senri Miyaoka, Zushi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1976, Ser. No. 658,999
Claims priority, application Japan, Feb. 24, 1975, 50-22590
Int. Cl.² H04N 5/76
U.S. Cl. 358—128 **6 Claims**



1. In a signal play-back device having a substantially flat record carrier with first and second oppositely facing reflective surfaces and a signal recorded as variations in at least said second surface, a light source emitting a light beam for scanning the recorded signal variations and providing correspondingly varied reflected beam energy, and photo-detecting means for receiving said varied reflected beam energy and providing a corresponding output; an optical system for continuously focussing said light beam at a point on said second surface irrespective of movements of said record carrier in directions normal to said surfaces comprising first lens means directing said light bean from said source in a path extending substantially normal to said first surface for reflection by the latter and focussing the light beam reflected from said first surface at an image point remote from said first surface, second lens means focussing said image point onto said second surface and directing the reflection of said image point from said second surface to said photodetecting means, said light beam, as received by said first lens means from said light source, being a parallel light beam, said first lens means being dimensioned and positioned in respect to said record carrier and said light source for focussing said parallel light beam from the latter at a point which is spaced along said path from said first surface in the direction toward said first lens means for the full range of said movements of the record carrier in sid directions, and said first and second lens means having respective magnification factors N_1 and N_2 satisfying the following relation:

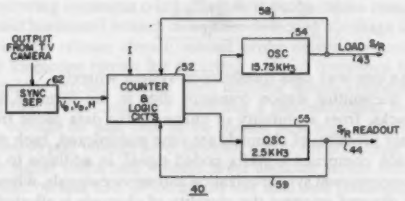
$$N_1 \cdot N_2 = 1/\sqrt{2}.$$

4,058,835

SCAN CONVERSION APPARATUS

Paul G. Kennedy, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 8, 1974, Ser. No. 522,189
Int. Cl.² H04N 7/12
U.S. Cl. 358—134 **14 Claims**



1. A system for transmitting a standard television picture over a relatively narrow bandwidth transmission link, comprising:

A. means providing an information containing television signal scanned in a plurality of television lines each comprised of a plurality of adjacent picture elements;

B. means for sampling picture elements lying along a line substantially orthogonal to the direction of line scan and deriving a reduced bandwidth television signal therefrom;

C. means coupling said reduced bandwidth television signal to said transmission link for transmission thereof;

D. means for receiving and processing transmitted reduced bandwidth television signals and displaying each as a single scanned line.

4,058,836

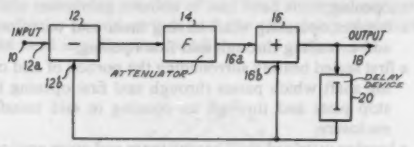
NOISE REDUCTION IN TELEVISION SIGNALS

John Oliver Drewery, Coulsdon, and Martin Weston, Epsom, both of England, assignors to The Marconi Company Limited and Standard Telephones & Cables Limited, both of London, England

Filed Apr. 26, 1976, Ser. No. 680,054
Claims priority, application United Kingdom, Apr. 25, 1975, 17331/75
Int. Cl.² H04N 5/21
U.S. Cl. 358—167 **9 Claims**

1. A method of reducing the effect of noise in an electrical input signal which is obtained by scanning, to provide an output signal, comprising the steps of subtracting from the input for the current scan the said output signal for a preceding scan to provide a difference signal, attenuating low-amplitude

portions of the difference signal relative to high amplitude portions thereof, and adding the thus-attenuated signal to the



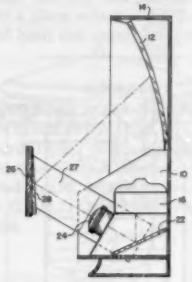
said output signal for the preceding scan to provide an output signal for the current scan.

4,058,837

PROJECTION TELEVISION RECEIVER

Earl W. Muntz, 3416 Alana Drive, Sherman Oaks, Calif. 91403

Filed Sept. 7, 1976, Ser. No. 720,681
Int. Cl.[2] H04N *5/655*
U.S. Cl. 358—237 **3 Claims**



1. Television apparatus including: a cabinet; a display screen mounted in an upright position on top of said cabinet adjacent to the rear side thereof; a television receiver mounted in said cabinet having a downwardly facing viewing screen; first reflector means mounted in said cabinet directly under the viewing screen of the television receiver in an inclined position relative to said viewing screen; a slider mounted in the front of the cabinet and movable to an open position and to a closed position; a projection lens mounted in said cabinet to one side of the television receiver for directing images reflected by said first reflector means from the viewing screen of the television receiver to the surface of said slider; and a second reflector means mounted on the surface of said slider and positioned for directing the images from the viewing screen of the television receiver onto said display screen when the slider is in its open position and with a size corresponding to the size of said display screen.

4,058,838

PACKET-SWITCHED FACSIMILE COMMUNICATIONS SYSTEM

William C. Crager, West Islip; Sudhindra R. Umarji, New York, both of N.Y.; Robert H. Griffin, Montclair, N.J., and Gerard J. Louit, New Haven, Conn., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

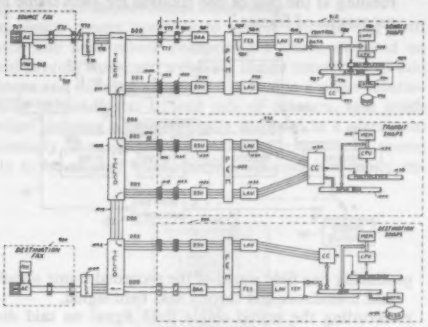
Filed Nov. 10, 1976, Ser. No. 740,682
Int. Cl.[2] H04N *1/32*; H04L *11/20*
U.S. Cl. 358—257 **37 Claims**

1. A packet-switched facsimile data communications system comprising:

means for receiving message information from one or more facsimile terminals;

means for subdividing said message information from each of said facsimile terminals into a plurality of data packets, each of said packets including at least a portion of said message information;

means for independently transmitting said data packets over said communications system including a network of a



plurality of switching nodes for selectively storing and forwarding said packets over said network in accordance with information contained by said packets; and

processing means for storing said data packets for reassembly of said packets into said message information.

4,058,839

MAGNETIC-TYPE INFORMATION CARD AND METHOD AND APPARATUS FOR ENCODING AND READING

John C. Darjany, Signal Hill, Calif., assignor to R. D. Products, Inc., Victor, N.Y.

Continuation-in-part of Ser. No. 499,198, Aug. 21, 1974, Pat. No. 3,946,206. This application Sept. 3, 1974, Ser. No. 502,532
Int. Cl.[2] G06K *7/08*; G11B *15/60, 23/02*
U.S. Cl. 360—2 **27 Claims**

1. A flexible resilient magnetic particle type information card capable of correctly reading information thereon after such card has been bent back double on itself and creased at the region of the card that includes the magnetic particles, said card comprising a flexible base, a layer of uniformly distributed magnetic particles thereon, and a flexible overlayer of nonmagnetic material, said overlayer having a thickness of at least 2 mils, said layer of magnetic particles being magnetically digitally encoded, consecutive equal portions of said layer having one polarity of magnetic flux or the opposite polarity, with abrupt magnetic flux transitions between oppositely polarized portions, the magnetic flux transitions of such encoding being at least 0.02 inch apart and said magnetic particle layer being enclosed between the base layer and overlayer and spaced from the edges of the card.

4,058,840

METHOD AND APPARATUS FOR RECORDING A SINGLE VIDEO FRAME

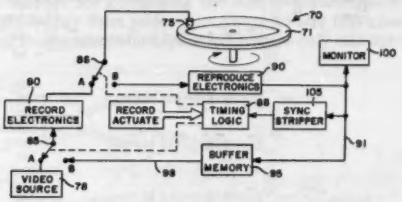
Vincent D. Kasprzak, Mountain View, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 635,671, Nov. 26, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 776,996
Int. Cl.[2] H04N *5/795*
U.S. Cl. 360—10 **6 Claims**

1. A method of developing a frame signal from a video signal

comprised of a succession of frames, each frame including two interlaced fields, comprising the steps of:

recording a single frame signal on a disc recorder, said disc recorder including a single transducer and a magnetic disc rotating at the rate of one rotation for each frame in said succession of frames,



producing one field signal of the recorded frame signal with said transducer and storing said field signal,

rerecording the stored single field signal on said disc recorder, and

reproducing the two field signals recorded on said disc recorder whereby a frame signal consisting of two identical interlaced fields is provided.

4,058,841

MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS WITH DEVICE FOR RECORDING AND/OR REPRODUCING CONTROL SIGNALS

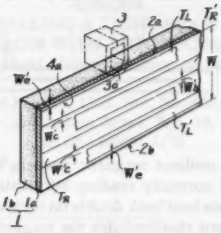
Yoshio Kishi, Tokyo, and Masaru Nagami, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 25, 1975, Ser. No. 635,249

Claims priority, application Japan, Nov. 27, 1974, 49-136833

Int. Cl.² G11B *5/43, 5/78*

U.S. Cl. 360—27 **8 Claims**



1. In an apparatus for recording and/or reproducing information signals in at least one record track on a face of a magnetic tape as the latter is guided to move longitudinally in a predetermined path; means disposed adjacent said path for recording and/or reproducing a control signal in an edge surface of the tape which edge surface is substantially at right angles to said face of the tape.

4,058,842

CONTROL ASSEMBLY FOR POWER DISTRIBUTION TRANSFORMERS

Ronald E. Benton, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 16, 1975, Ser. No. 622,916

Int. Cl.² H02H *7/04*

U.S. Cl. 361—38 **5 Claims**

1. A control assembly for distribution power transformers containing a circuit breaker, comprising:

a stop plate having first and second openings therein, said stop plate being located on the outside of the transformer enclosure, said stop plate having first and second projections extending therefrom in radial spaced relation from said first opening and third and fourth projections extending therefrom in radial spaced relation from said second opening;

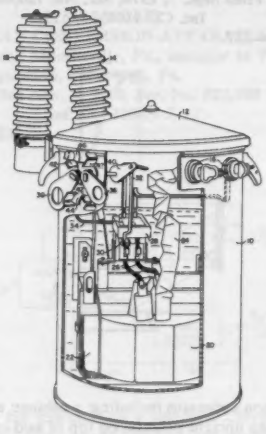
a breaker operating shaft having inner and outer portions and extending through said first opening;

a first sealed bearing surrounding the portion of said operating shaft which passes through said first opening in said stop plate and through an opening in said transformer enclosure;

a breaker overload shaft having inner and outer portions and extending through said second opening;

a second sealed bearing surrounding the portion of said overload shaft which passes through said second opening in said stop plate and through an opening in said transformer enclosure;

an operating handle attached to said outer portion of said operating shaft and aligned for rotation between said first and second projections of said stop plate;



an overload handle attached to said outer portion of said overload shaft and aligned for rotation between said third and fourth projections of said stop plate;

an operating arm attached to said inner portion of said operating shaft;

said circuit breaker having a contact lever;

means for connecting said operating arm to said contact lever such that rotation of said operating handle between said first and second projections will cause said contact lever on the circuit breaker to move;

said circuit breaker having overload means for changing the trip-current characteristics of said circuit breaker;

an overload arm attached to the inner portion of the overload shaft; and

means for connecting said overload arm to said overload means such that rotation of said overload handle between said third and fourth projections will cause said overload means to move.

4,058,843

HEAD AND GIMBAL ASSEMBLY

Ko Ko Gyi, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 3, 1975, Ser. No. 593,123

Int. Cl.² G11B *5/60, 17/32, 21/20*

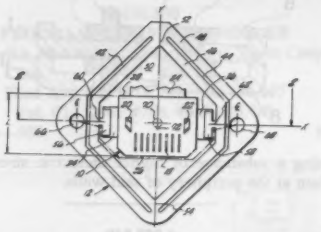
U.S. Cl. 360—103 **7 Claims**

1. In combination:

a transducer head constructed and arranged for flying on a fluid bearing in close proximity to a transducing surface;

gimbal supporting means to which said head is mounted for flyng so as to provide flexural freedom of rotation of said

head around predetermined axes parallel to said surface while restraining rotation of said head about an axis perpendicular to said surface and also restraining motion of said head in a direction parallel to said surface; and



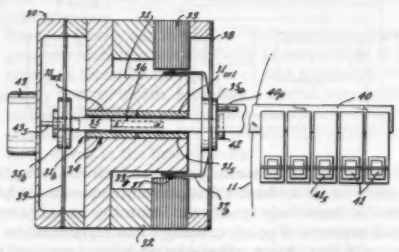
head actuating means for applying a loading force to said head to urge said head toward said surface in a direction perpendicular thereto, said actuating means contacting said head in a plane which is coplanar with the center of mass of said head and parallel to said surface.

4,058,844

LOW-MASS SHORT-STROKE VOICE-COIL ACTUATOR FOR INTEGRATED DISK FILE MODULE

Wolfgang Gerhard Dirks, Saratoga, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 2, 1976, Ser. No. 673,157
Int. Cl.[2] G11B *21/22, 21/08, 5/55;* H04R *9/06*
U.S. Cl. 360—106 **14 Claims**



1. A voice-coil actuator system comprising:
a. a main magnetic circuit having a pole shoe and a magnet forming an air gap;
b. a voice-coil residing and moving totally within said air gap;
c. means for supporting said voice-coil;
d. means for developing a signal for sensing motion of, direction of, and velocity of, said voice-coil including:
d-1. means for obviating the effect of changing magnetic fields due to voice-coil motion in said air gap of said main magnetic circuit.

4,058,845

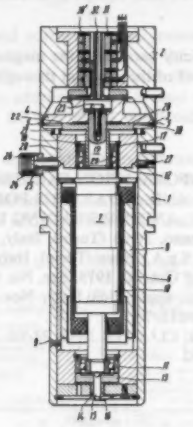
SCANNING DEVICE FOR HELICAL TYPE VIDEO TAPE RECORDER

Heinrich Zahn, Rossdorf, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed May 21, 1976, Ser. No. 688,627
Claims priority, application Germany, May 23, 1975, 2522900
Int. Cl.[2] G11B *21/18, 21/24, 5/52*
U.S. Cl. 360—107 **2 Claims**

1. In a scanning device, for use in a magnetic tape instrument of the type using magnetic heads and diagonal track scanning with the magnetic tape following a path over the scanning device, and comprising an outer two-part stationary guide drum having a central axis and supporting an inner head assembly revolving about an axis of rotation, and including a head-wheel supporting the magnetic heads and a motor having a driving shaft, the improvement comprising:

transmission means operable to couple said driving shaft with said head-wheel, comprising a sleeve disposed on said driving shaft, and a driving flange connected to said sleeve and defining a surface disposed in a plane substantially perpendicular to said axis of rotation, said head-wheel defining a face normally disposed in a plane substantially perpendicular to the axis of rotation and operable to be aligned in abutment with and frictionally engaged by said surface, both said surface and said head-wheel being substantially circular in shape, said surface having an external diameter of at least one-half the outer diameter of said head-wheel, the magnetic heads being disposed on said face, said transmission means including a ball bearing supporting at least partially said inner head assembly, a rotatably mounted inner ring, said sleeve being supported by said inner ring, an outer threaded ring, and a jacket encompassing said bearing and abutting said threaded ring, said threaded ring and said jacket being located within one of said two-part stationary guide drums whereby said driving flange will drive said head-wheel when the motor is activated.



4,058,846

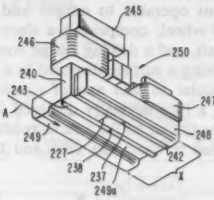
GROUNDED TRANSDUCER FOR MAGNETIC RECORD DISKS

Gerald Roy Knutson, and Karl Allen Shidler, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1976, Ser. No. 698,235
Int. Cl.[2] G11B *5/27, 5/28*
U.S. Cl. 360—121 **6 Claims**

1. A magnetic head assembly for cooperating with a relatively moving magnetic medium comprising:
a read-write core of electrically insulating and magnetically permeable material having a transducer gap in a contact surface of the head assembly adapted to contact or have a thin air bearing with the magnetic medium,
a read-write winding on said core,
an erase core of electrically insulating and magnetically permeable material having first and second opposite sides and bonded on its first side to said read-write core and having a transducer gap in said contact surface,
an erase winding on said erase core, and
a thin layer of electrically conducting material disposed on said second side of said erase core which is remote from

said read-write core and extending away from and terminating on said contact surface of the head assembly so that



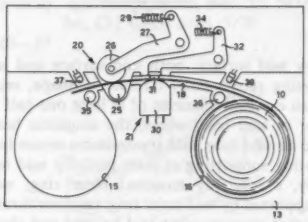
static electricity carried by the magnetic medium may be conducted off of the medium through said layer.

4,058,847

MAGNETIC INFORMATION CARRIER HAVING BOTH ENDS FREE AND APPARATUS FOR WRITING ON AND/OR READING IT

Gian Luigi Ponzano, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Oct. 30, 1975, Ser. No. 627,260
Claims priority, application Italy, Nov. 7, 1974, 70271/74; Aug. 21, 1975, 69113/75
Int. Cl.[2] G11B *5/78, 23/08, 25/06*
U.S. Cl. 360—132 **11 Claims**



1. A cassette containing a magnetic information strip of the type comprising a base of flexible material pretensioned so as to assume when at rest a stable configuration following a spiral path and a coating layer of magnetizable material coating a surface of said strip, wherein said strip has two free ends, said cassette comprising a container, means defining in said container a cavity wherein said strip is placed and an aperture, guide means for guiding said strip out of said container through said aperture, a feed mechanism mounted on said container along said guide means and means for preventing the passage of both ends of said strip through said guide means.

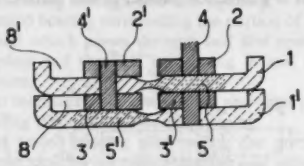
4,058,848

CUT-OFF CHAMBER OF A LIGHTNING PROTECTOR

Robert Deville, Lyon, France, assignor to Delle-Alsthom, Villeurbanne, France

Filed Feb. 11, 1976, Ser. No. 657,333
Claims priority, application France, Feb. 11, 1975, 75.04201
Int. Cl.[2] H02H *3/22*
U.S. Cl. 361—128 **15 Claims**

1. Cut-off chamber defined by two adjacent walls having a periphery, a central region, electrodes located in said central region, and zones of high potential gradients around said electrodes, characterized in that said walls are made of a porous ceramic material ensuring the discharge and the cooling of the gases at the periphery of the chamber at the time of the flash of an arc between said electrodes, said porous ceramic material



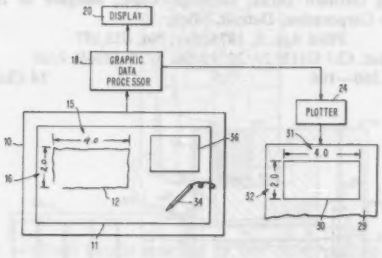
comprising a substance of higher dielectric strength at said zones than at the periphery of said walls.

4,058,849

SYSTEM FOR CONVERTING A ROUGH SKETCH TO A FINISHED DRAWING

William Joseph Fitzgerald, Ridgefield, Conn.; Glenmore Lorraine Shelton, Jr., Carmel, and Robert Nolan Wolfe, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1975, Ser. No. 615,880
Int. Cl.[2] G06F *15/00*
U.S. Cl. 364—520 **23 Claims**



1. In a digital data processing system which utilizes a graphic data entry means to form a first pointing sequence list having entries that tentatively specify the respective coordinates of a selected sequence of points defining a first representation of an object, said first object representation being permitted to include at least some points that should be axially alined with each other but which actually are displaced by groosly dissimilar amounts from the related coordinate axis in each instance,

a method of continuously processing the entires in said first list to produce a second list having entries that specify the respective coordinates of a corresponding sequence of points in a revised representation of said object which satisfies axial alinement requirements, said method comprising the following steps:

a. identifying from the data contained in the entries of said first list any set of adjacently ordered points in the first-named sequence whose counterparts in the revised object representation are to be positioned on a common line paralleling either of the coordinate axes regardless of any gross deviation from said parallel relationship that may exist in said first object representation;

b. in response to identification of any such set of points, forming a related set of entires in said second list wherein each of the entries but one in said related set has a pointer portion indicating that the coordinate specified by said one entry is to be a projected coordinate common to all members of that set;

c. repeating steps a and b automaticaly as needed until sets of entries have teen formed in said second list for all sets of axially lined points that are to be included in the revised object representation; and

d. operating a graphic output manifesting means under con-

trol of the entries in said second list for producing a visible representation of said object which effectively corrects errors previously made in the placement of points relative to the coordinate axes in said first object representation, including errors of gross magnitudes.

4,058,850

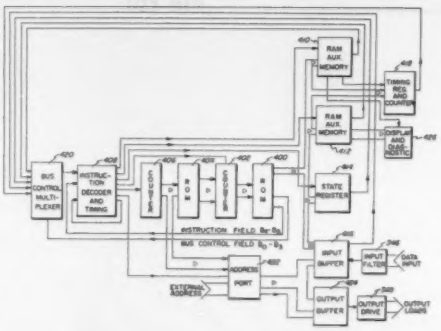
PROGRAMMABLE CONTROLLER

Sikander Sheikh, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 12, 1974, Ser. No. 496,667

Int. Cl.[2] G06F *9/06;* **G03G** *15/00*

U.S. Cl. 364—900 **9 Claims**



1. A processor for controlling an apparatus by actuating elements of said apparatus in accordance with a predetermined program and in response to apparatus condition indicators comprising:

a first non-destructive memory which stores an operational program including a multiplicity of instructions at predetermined locations for control of said apparatus;

memory control means, including a second non-destructive memory coupled to said first non-destructive memory, for controlling a sequence of execution of program instructions stored in the first memory;

a buffer memory interface for storing input data to said processor and for storing output data from said processor, said memory control means arranged for simultaneously addressing a memory location in said first memory and at least one location in said buffer memory interface; and,

means for decoding a first memory instruction which is extracted from said first memory and for causing an execution of said first memory instruction as determined by an operation code of said instruction.

4,058,851

CONDITIONAL BYPASS OF ERROR CORRECTION FOR DUAL MEMORY ACCESS TIME SELECTION

James Herman Scheuneman, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,687

Int. Cl.[2] G06F *11/10, 13/00, 11/00, 1/04*

U.S. Cl. 364—900 **5 Claims**

1. A conditional bypass error correction system for an addressable main memory, comprising:

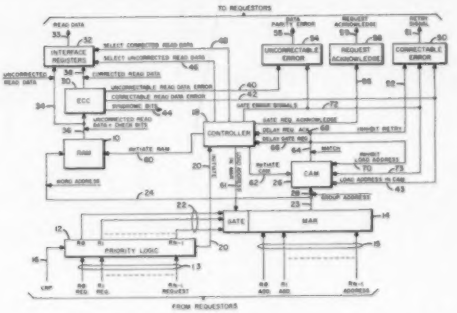
memory address register means adapted to receive and store a multibit address for addressing an associated one of an addressable location of a main memory means;

main memory means responsively coupled to said memory address register means and comprising a plurality of addressable locations each of which addressable locations includes a plurality of memory cells in which are stored a plurality of uncorrected read bits and a plurality of associated check bits;

content addressable memory means responsively coupled to said memory address register means and comprising a plurality of content addressable locations each of which includes a plurality of memory cells and in each of which content addressable locations are stored a plurality of address bits that define an address of an addressable location in said main memory means and means associated with said content addressable locations for providing an indication of the comparison of the address bits stored in said memory address register means and the address bits stored in an associated one of said content addressable locations;

error detection and correction logic means coupled to said main memory means and receiving the read bits and the associated check bits from an addressable location addressed by the address stored in said memory address register means for generating corrected read bits therefrom;

interface register means coupled to said main memory means for receiving the uncorrected read bits from said addressed addressable location in said main memory means and coupled to said error detection and correction logic



means for receiving the corrected read bits from said error detection and correction logic means;

timing means responsively coupled to said content addressable memory means for coupling a relatively early interface register first gate pulse to said interface register means for coupling said uncorrected read bits into said interface register means if said comparison is a Match condition indicating a determination that the address bits stored in said memory address register means are stored in an associated one of the content addressable locations, or, alternatively, coupling a relatively late interface register second gate pulse to said interface register means for coupling said corrected read bits into said interface register means if said comparison is a Match condition indicating a determination that the address bits stored in said memory address register means are not stored in an associated one of the content addressable locations, said first gate pulse bypassing the error detection and correction operation of said error detection and correction logic means providing a first relatively fast memory access time while said second gate pulse does not bypass the error detection and correction operation of said error detection and correction logic means providing a second relatively slow memory access time, all as determined by said comparison.

DESIGN PATENTS

GRANTED NOVEMBER 15, 1977

ERRATA

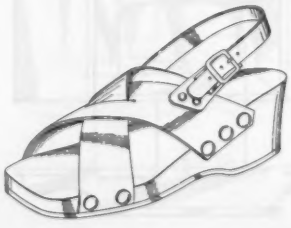
For CLASS	See PATENT NO.
025–010	246,381

DESIGNS

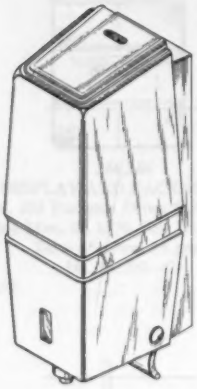
NOVEMBER 15, 1977

246,336
DRESS
Doris Brosk, 150 E. 69th St., New York, N.Y. 10017
Filed Feb. 20, 1976, Ser. No. 660,036
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—146

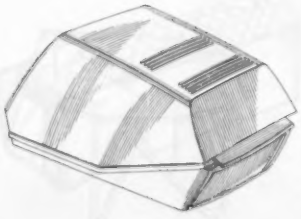
246,337
SANDAL
Stephen Niarhos, 850 Truesdale Road, Youngstown, Ohio 44511
Filed Oct. 23, 1975, Ser. No. 625,063
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—293



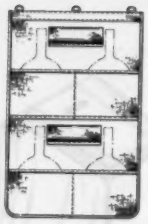
246,338
DISPENSER FOR LIQUIDS
Paul W. Jespersen, Stamford, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed July 5, 1974, Ser. No. 486,078
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95



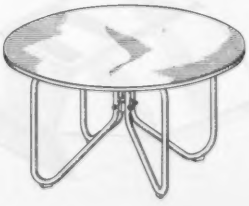
246,339
TISSUE DISPENSING APPARATUS
Gideon S. Tucker, 3434 Nogales, Apt. 104, Dallas, Tex. 75220
Filed Mar. 17, 1976, Ser. No. 667,854
Term of patent 7 years
Int. Cl. D23—*02*
U.S. Cl. D6—96



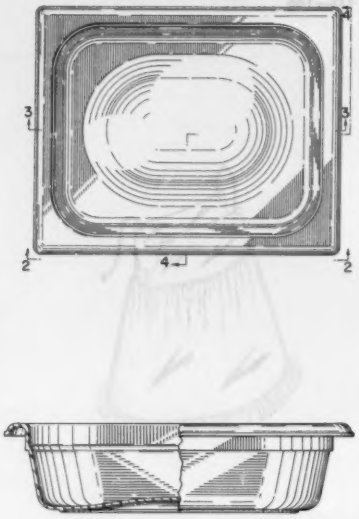
246,340
COMBINED PADDLE AND BALL HOLDER
Arlene Frank, 263 Hastings, Highland Park, Ill. 60035
Filed July 21, 1976, Ser. No. 707,182
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—131



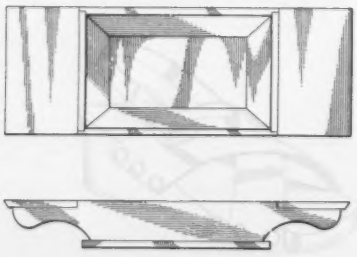
246,341
TABLE
Stephen G. Boughton, Antioch, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed May 17, 1976, Ser. No. 687,436
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



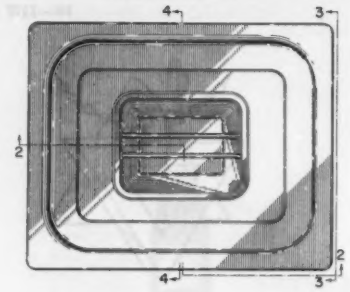
246,342
FOOD SERVICE PAN
Ronald C. Yonkers, Winchester, Va., assignor to Rubbermaid Commercial Products Inc.
Filed Mar. 15, 1976, Ser. No. 666,690
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



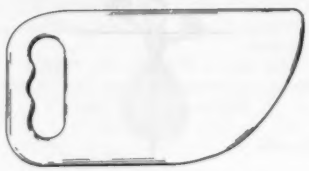
246,343
DOUGH BOX
Frank Morabito, 366 Hamilton Ave., Hewlett, Long Island, N.Y. 11557
Filed Jan. 28, 1976, Ser. No. 653,193
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—21



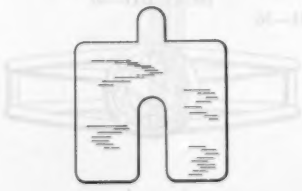
246,344
FOOD SERVICE PAN LID
Ronald C. Yonkers, Winchester, Va., assignor to Rubbermaid Commercial Products Inc.
Filed Mar. 15, 1976, Ser. No. 666,708
Term of patent 14 years
Int. Cl. D7—02
U.S. Cl. D7—131



246,345
IMPLEMENT TO TUCK BLANKET IN WATERBEDS
Marcia E. Poncia, 408 Alameda, Redwood City, Calif. 94061
Filed June 16, 1975, Ser. No. 587,061
Term of patent 14 years
Int. Cl. D7—99
U.S. Cl. D7—181



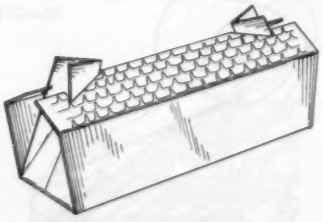
246,346
SHIM FOR MOTOR OR THE LIKE
Fred E. Strunk, 205 Landano St., Vallejo, Calif. 94590
Filed May 8, 1975, Ser. No. 575,789
Term of patent 14 years
Int. Cl. D8—08
U.S. Cl. D8—354



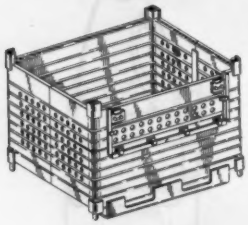
246,347
BOTTLE
William James Britt, Greenville, S.C., assignor to Morton-Norwich Products, Inc., Greenville, S.C.
Filed Mar. 26, 1976, Ser. No. 670,874
Term of patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—42

246,348
COMBINED DISPLAY AND PACKAGING CONTAINER
W. Lee Einhorn, 253 Parkside Drive, Suffern, N.Y. 10901
Filed Mar. 29, 1976, Ser. No. 671,256
Term of patent 14 years
Int. Cl. D9—03
U.S. Cl. D9—195

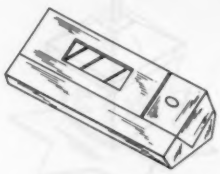
246,349
FOOD CARTON
Carle D. Klupt, Baltimore, Md., assignor to Doughtie's Foods, Inc., Portsmouth, Va.
Filed Apr. 21, 1976, Ser. No. 678,800
Term of patent 14 years
Int. Cl. D9—03
U.S. Cl. D9—197



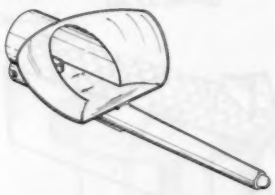
246,350
MATERIAL HANDLING BOX
William R. Powell, Hubbard, Ohio, assignor to The Powell Pressed Steel Company, Hubbard, Ohio
Filed Nov. 13, 1975, Ser. No. 631,492
The portion of the term of this patent subsequent to Apr. 12, 1991, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—246



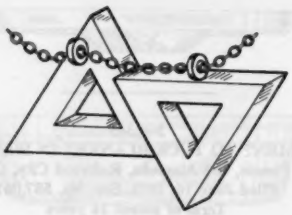
246,351
DIGITAL CLOCK
Yoshisaburo Yoshida, and Seiichiro Nishiguchi, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 8, 1976, Ser. No. 664,423
Claims priority, application Japan, Mar. 8, 1975, 50-36743
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



246,352
PROBE COVER
Jerald P. Dykstra, Austin, Tex., assignor to Amsco/Medical Electronics, Inc., Austin, Tex.
Filed May 27, 1976, Ser. No. 690,734
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—60



246,353
COMBINED NECK CHAIN AND PENDANTS
Henri Elkaim, 5 Rue de Quatre Fages, Paris, France (75005)
Filed Dec. 15, 1975, Ser. No. 640,656
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—8



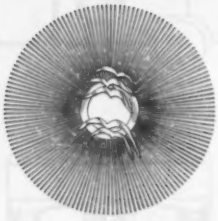
246,354
WIRE AND DIAMOND RING
Alfred Joseph Durante, Forest Hills, N.Y., assignor to Cartier, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 557,126, March 10, 1975, abandoned. This application Sept. 15, 1976, Ser. No. 723,632
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—36

246,355
DIAMOND PENDANT
Alfred Joseph Durante, Forest Hills, N.Y., assignor to Cartier, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 569,769, April 21, 1975, abandoned. This application Sept. 15, 1976, Ser. No. 723,630
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—44

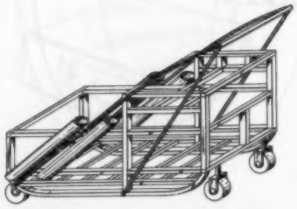
246,356
PENDANT DOLL
Douglas A. Fox, 801 Erickson-Apt. 20, Anchorage, Alaska 99501
Filed Jan. 19, 1976, Ser. No. 650,251
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D11—44

246,357
EARRING
Alfred Joseph Durante, Forest Hills, N.Y., assignor to Cartier, Inc., New York, N.Y.
Filed Oct. 6, 1975, Ser. No. 619,937
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—40

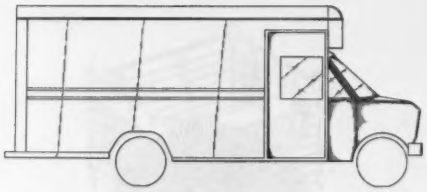
246,358
SUNBURST WALL PLAQUE
Donald R. Ditto, 4938 Sharp St., Dallas, Tex. 75247
Filed Apr. 29, 1976, Ser. No. 681,739
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D11—137

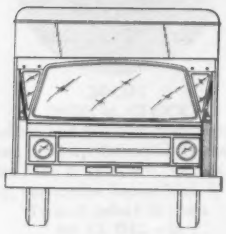


246,359
CART FOR FISHING EQUIPMENT
Harvey B. Powers, and Joan H. Powers, both of 8172 Electric Ave., Vienna, Va. 22180
Filed Sept. 20, 1976, Ser. No. 724,936
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29

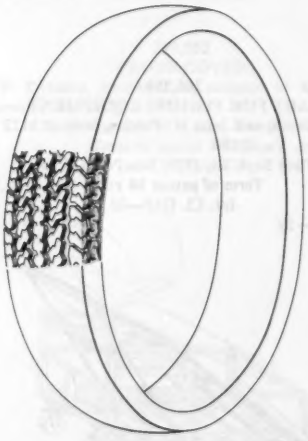


246,360
VAN BODY
Paul R. Hafer, Boyertown, Pa., assignor to Boyertown Auto Body Works, Boyertown, Pa.
Filed Jan. 26, 1976, Ser. No. 652,508
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—99

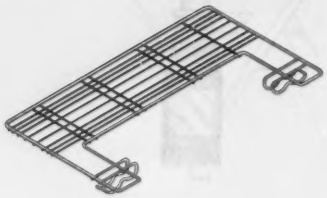




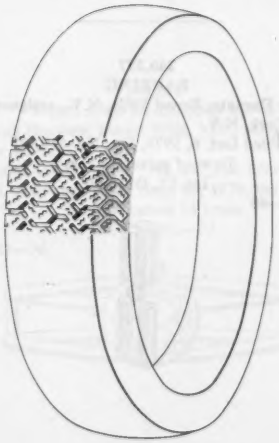
246,361
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Wilbraham, Mass., assignor to Uniroyal, Inc.
Filed Nov. 24, 1976, Ser. No. 744,537
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



246,362
COMBINED UTILITY AND BOOK HOLDER SUPPORTING TRAY, HOLD OPEN BRACE AND PATIENT RESTRAINT TO BE REMOVABLY MOUNTED ON THE ARMRESTS OF COLLAPSIBLE WHEELCHAIRS
Gus Levin, 4515 N. Braeswood, Apt. 302B, Houston, Tex. 77035
Filed Dec. 2, 1976, Ser. No. 747,231
Term of patent 14 years
Int. Cl. D12—*16*; D6—*06*
U.S. Cl. D12—133



246,363
PNEUMATIC TIRE TREAD AND BUTTRESS
Dionysius J. Poque, Aachen, Germany, assignor to Uniroyal Aktiengesellschaft
Filed Mar. 4, 1977, Ser. No. 774,295
Claims priority, application Germany, Oct. 19, 1976, 203153
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

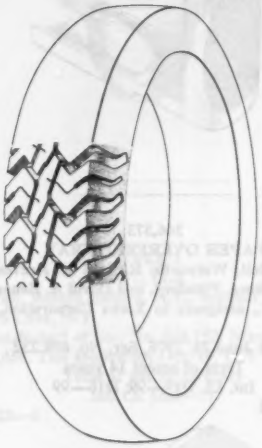


246,364

PNEUMATIC TIRE TREAD AND BUTTRESS

Gerassimos C. Candiliotis, 3 Ruth Drive, Wilbraham, Mass. 01095

Filed Jan. 21, 1977, Ser. No. 761,518
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151

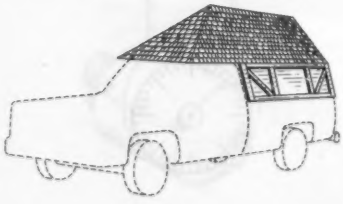


246,365

PICKUP TRUCK CAMPER UNIT

Gary W. Floyd, No. 149 Highway, Rte. 3, Box 64, Novinger, Mo. 63559

Filed May 24, 1976, Ser. No. 689,636
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156

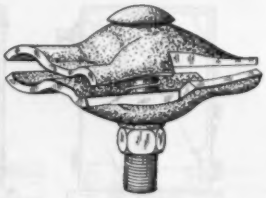


246,366

CLAMP-TYPE ELECTRICAL CONNECTOR

James L. McGrath, Medinah, Ill., assignor to UTM Power Products, Inc.

Filed Mar. 22, 1976, Ser. No. 669,007
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



246,367

FILM REEL SPACER

Martin M. Schankler, East Brunswick, N.J., assignor to Microfilm Enterprises Corporation, East Brunswick, N.J.

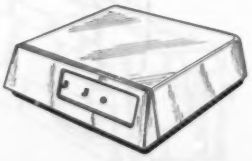
Filed Oct. 8, 1975, Ser. No. 620,828
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D14—11

246,368

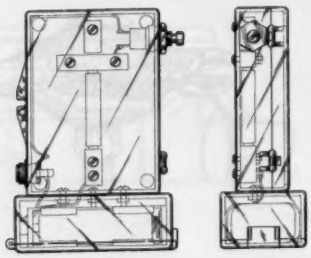
DESK TOP COMPUTER

Richard G. Barnich, Grand Blanc, and Gary D. Johnson, Brighton, both of Mich., assignors to Process Computer Systems, Inc., Saline, Mich.

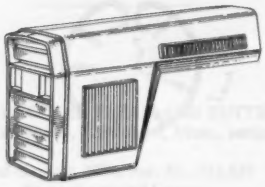
Filed July 19, 1976, Ser. No. 706,617
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—40



246,369
TAP TRANSDUCER INTERCOM
Gerard J. O'Brien, deceased, late of Jersey City, and by Catherine H. O'Brien, administratrix/executrix, 33 Pamrapo Ave., Jersey City, N.J. 07305
Filed Oct. 8, 1975, Ser. No. 620,631
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—92

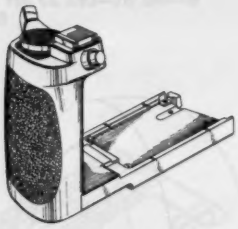


246,370
TRACTOR HOOD
Leo J. Lorenz, Farmington, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 9, 1976, Ser. No. 713,021
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—31

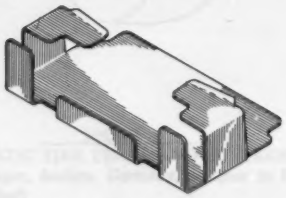


246,371
LIQUID APPLICATOR
Andrew L. Pansini, 200 Golden Gate Ave., Belvedere, Calif. 94920
Filed Feb. 19, 1976, Ser. No. 659,221
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—56

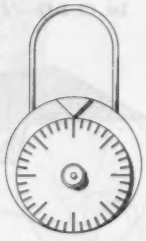
246,372
GRIP FOR A PHOTOGRAPHIC CAMERA
Zenzaburo Yoshino, 3-30-10, Kamikitazawa, Setagaya, Tokyo, Japan
Filed Sept. 8, 1976, Ser. No. 721,302
Claims priority, application Japan, Mar. 9, 1976, 51-8031
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D16—10



246,373
PAPER OVERFEED TRAY
Melvin G. Crandell, Walworth; Richard E. Reeves, Webster; Leonard Schachner, Pittsford, and David A. Benner, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed June 21, 1976, Ser. No. 698,232
Term of patent 14 years
Int. Cl. D19—*99*; D16—*99*
U.S. Cl. D16—32

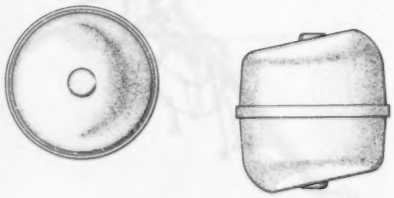


246,374
EDUCATIONAL AID
Dorothy L. Ratcliff, 6508 Grandview Drive, Indianapolis, Ind. 46260, and Ford Ratcliff, Jr., 717 E. 33rd St., Indianapolis, Ind. 46205
Filed Feb. 19, 1976, Ser. No. 659,288
Term of patent 3½ years
Int. Cl. D19—*07*
U.S. Cl. D19—64

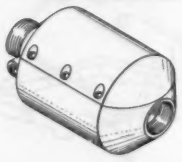


246,375
SEWAGE TANK
Ake Oskar Vilhelm Hellqvist, 130 40 Djurhamn, Sweden
Filed Jan. 30, 1976, Ser. No. 653,863
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2

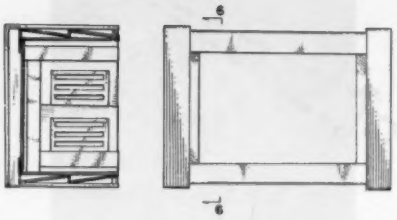
246,376
FILTER
David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.
Continuation-in-part of Ser. No. 668,153, March 18, 1976, Pat. No. D. 243,458. This application Oct. 18, 1976, Ser. No. 733,482
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



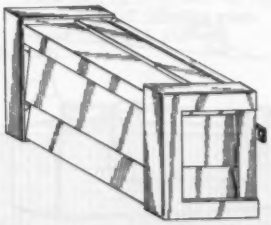
246,377
FLOW CONTROL VALVE
Andrew L. Pansini, 200 Golden Gate Ave., Belvedere, Calif. 94920
Filed Feb. 19, 1976, Ser. No. 659,222
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



246,378
AIR CONDITIONER COVER
Walter Mueller, 2275 7th St., East Meadow, N.Y. 11554
Filed Oct. 4, 1976, Ser. No. 729,375
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—141



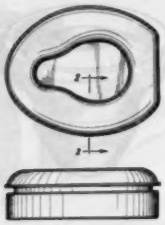
246,379
AIR CONDITIONER COVER
Walter Mueller, 2275 7th St., East Meadow, N.Y. 11554
Filed Feb. 9, 1977, Ser. No. 766,916
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—141



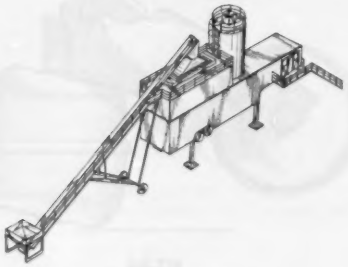
246,380
DEVICE FOR PIPETTING OF LIQUIDS
Alfons Th. Boothby, Pilauer Strasse 11, 2940 Wilhelmshaven, Germany
Filed Sept. 23, 1975, Ser. No. 616,076
Claims priority, application Germany, Mar. 27, 1975, 6610011
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—55

246,381
PORTABLE PREFABRICATED RESTAURANT BUILDING
Robert Barlow, Glendale; Frank Cesare, Palm Springs, and Carmen Miceli, North Hollywood, all of Calif., assignors to Frank J. Cesare
Filed Jan. 21, 1974, Ser. No. 435,308
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—10

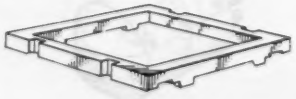
246,382
BEDPAN
John Castlereagh Parker, III, 2127 Philomene, Lincoln Park, Mich. 48146
Filed Nov. 10, 1975, Ser. No. 630,267
Term of patent 7 years
Int. Cl. D24—*04*
U.S. Cl. D24—57



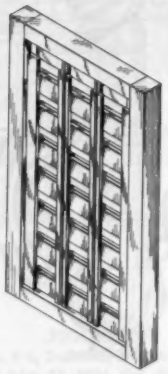
246,383
CONCRETE STATION
Sture Bostrom, Umea, Sweden, assignor to Aktiebolaget Robacks Mekaniska, Umea, Sweden
Filed Oct. 28, 1975, Ser. No. 626,202
Claims priority, application Sweden, Apr. 28, 1975, 898/75
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—3



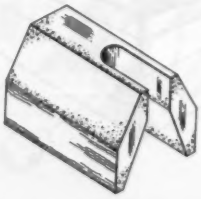
246,384
PRE-CAST CONCRETE UNIT FOR MANHOLES
Brian E. Brown, Burlington, and Alfred G. Hall, London, both of Canada, assignors to Moduloc Concrete Products (London) Ltd., Concorde, Canada
Filed Aug. 9, 1976, Ser. No. 712,761
Claims priority, application Canada, Feb. 9, 1976, 902761
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—36



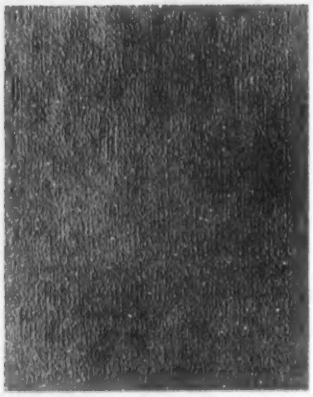
246,385
GRILLE AND THE LIKE
Robert T. Bogan, P.O. Box 26208, Albuquerque, N. Mex. 87125
Filed Jan. 21, 1976, Ser. No. 651,124
Term of patent 14 years
Int. Cl. D25—*01, 02*
U.S. Cl. D25—47



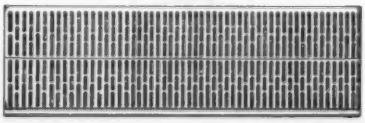
246,386
CONCRETE BLOCK
Edward L. Hardin, 355 Laverne, Mill Valley, Calif. 94941
Filed Nov. 17, 1975, Ser. No. 632,523
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—97



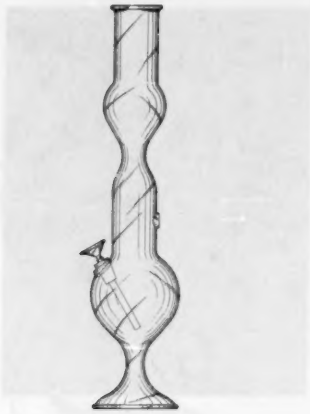
246,387
CEILING TILE
Phillip Schuss, 2942 Dale Ave., Columbus, Ohio 43209
Filed Oct. 1, 1975, Ser. No. 618,726
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



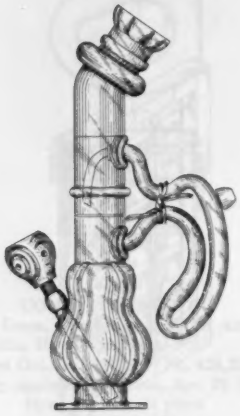
246,388
PERFORATED PLANK FOR THE FLOOR OF A MATERIAL DRYING BIN
Charles C. Shivvers, 614 W. English, Corydon, Iowa 50060
Filed Aug. 12, 1976, Ser. No. 713,669
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—91



246,389
SMOKING DEVICE
Roger Graham, 931 Selim Road, Silver Spring, Md. 20910
Filed Jan. 16, 1976, Ser. No. 649,699
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—3

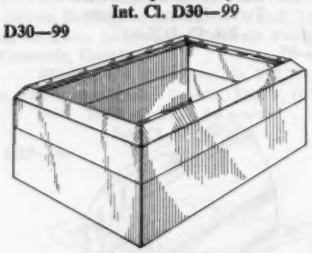


246,391
WATER COOLED SMOKING DEVICE
Robert A. Lefkow, 1602 Strand, and Alan E. Gross, 43 - 18th St., both of Hermosa Beach, Calif. 90254
Filed July 9, 1976, Ser. No. 703,916
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—3

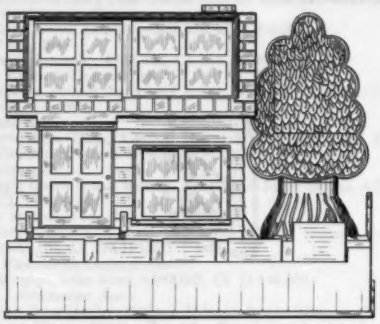


246,390
COMBINED PIPE TAMPER AND SCRAPER
Michael H. Endres, P.O. Box 1722, APO San Francisco, Calif. 96555
Filed July 12, 1976, Ser. No. 704,185
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51

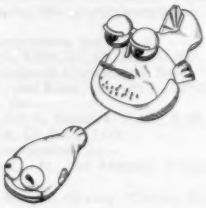
246,392
CAT LITTER BOX
Duaine E. Smith, P.O. Box 19006, Denver, Colo. 80219
Filed July 21, 1975, Ser. No. 597,597
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



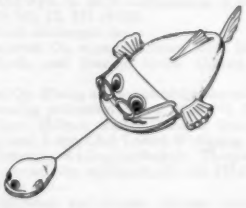
246,393
TOY HOUSE
Michael I. Satten, 15 Spruce Place, Great Neck Estates, N.Y. 11021
Filed Jan. 29, 1976, Ser. No. 653,546
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



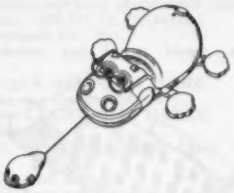
246,394
FIGURE TOY
Shigeru Saito, No. 6-4, 2-chome, Kuramae, Taito Tokyo, Japan
Filed May 12, 1976, Ser. No. 685,536
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



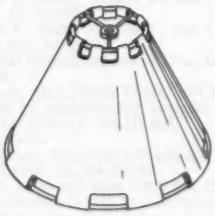
246,395
FIGURE TOY
Shigeru Saito, No. 6-4, 2-chome, Kuramae, Taito Tokyo, Japan
Filed Apr. 20, 1976, Ser. No. 674,847
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



246,396
FIGURE TOY
Shigeru Saito, No. 6-4, 2-chome, Kuramae, Taito Tokyo, Japan
Filed Apr. 20, 1976, Ser. No. 674,848
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



246,397
COLLAPSIBLE LAMP SHADE
Donald J. Booty, Frankfort, Ill., assignor to Keystone Lamp Mfg. Corporation, Slatington, Pa.
Filed Nov. 1, 1976, Ser. No. 737,452
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 R



246,398
SUPPORT FOR HANUKKAH LIGHTS
Michael Jay Raulson, 1525 SW. 82nd Place, Miami, Fla. 33144
Filed Feb. 11, 1976, Ser. No. 657,390
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 C

246,399

LIGHTING PANEL

Edward H. Harris, 1065 E. Flamingo Road, Apt. 524, Las Vegas, Nev. 89109

Filed Apr. 26, 1976, Ser. No. 680,587
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R

246,400

COMBINED CLOCK AND SIGN

Donald H. Niehaus, Crestview Hills, Ky.; Nick J. Schwab, Cincinnati, Ohio, and Patrick J. Seggerson, Fort Mitchell, Ky., assignors to American Sign and Advertising Services, Inc., Florence, Ky.

Filed Apr. 7, 1976, Ser. No. 674,609
Term of patent 14 years
Int. Cl. D20—*03;* D10—*01*
U.S. Cl. D96—12 J

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A. B. Dick Company: *See*—
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Winn, Russell Edward, 4,058,082, Cl. 118-9.000.

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AB Partner: *See*—
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Abbey Electronics Limited: *See*—
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Abbott Laboratories: *See*—
Jones, Peter Hadley; Bariana, Dilbagh Singh; Fung, Anthony Kei Lun; Martin, Yvonne Connolly; Kyncl, Jaroslav; and Lall, Amrit, 4,058,559, Cl. 260-520.00C.

Abbruzzese, Luigi; Gozzo, Franco; Rossi, Giorgio; Masoero, Marcella; Lorusso, Simone; Bonola, Paola; and Tamburin, Gino, to Montedison S.p.A. Quinoline derivatives having fungicidal activity. 4,058,613, Cl. 424-258.000.

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Marchbank, Ian, 4,058,215, Cl. 206-574.000.

Abell, Richard S.; and Kropiwnicki, Tadek M., to Carrier Corporation. Refrigerant compressor unit. 4,057,979, Cl. 62-469.000.

Ackermann, Otto; Bleh, Otto, deceased (by Bleh, Rita, legal representative); and Rogler, Walter, to Dynamit Nobel Aktiengesellschaft. Method of preparing alkoxymethylenemalonic acid esters. 4,058,553, Cl. 560-180.000.

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Aguilo, Jose Maria Genovart: *See*—
Aloy, Enrique Ubach; Aloy, Pedro Ubach; and Aguilo, Jose Maria Genovart, 4,058,584, Cl. 264-250.000.

Ahmed, Adel Abdel Aziz, to RCA Corporation. Reference potential generators. 4,058,760, Cl. 323-19.000.

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Aho, Yrjo, to Exel Oy. Fixing arrangement for the sealing pad on the ear hood of a hearing protection means. 4,057,856, Cl. 2-209.000.

Ahrens, Hanns; Biere, Helmut; Rufer, Clemens; Schmiechen, Ralph; Schroeder, Eberhard; Loge, Olaf; Losert, Wolfgang; and Schillinger, Ekkehard, to Schering Aktiengesellschaft. Thiophene derivatives having antilipolytic activity. 4,058,619, Cl. 424-275.000.

Ahrens, Stephen Carl: *See*—
Khajezadeh, Heshmat; and Ahrens, Stephen Carl, 4,057,894, Cl. 29-577.00C.

Aine, Harry E. Infrared absorption spectrometer employing a dual optoacoustic detector. 4,058,725, Cl. 250-343.000.

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Aisin Seiki Kabushiki Kaisha: *See*—
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Akkerman, Allardus A., to Domtar Limited. Reinforced side carry carton. 4,058,250, Cl. 229-52.00B.

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Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Ammonium faujasite zeolites. 4,058,484, Cl. 252-455.00Z.

Alagy, Jacques: *See*—
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Albert, Karmen D. High vacuum fastener. 4,058,281, Cl. 248-362.000.

Alco Electronic Products, Inc.: *See*—
Kirchoff, Francis D., 4,058,764, Cl. 324-51.000.

Alderman, Robert J. Modulation system with carrier control. 4,058,769, Cl. 325-144.000.

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Sachleben, Harold Gerard, Sr.; and Warren, Jerry Jay, 4,057,910, Cl. 34-227.000.

Aloy, Enrique Ubach; Aloy, Pedro Ubach; and Aguilo, Jose Maria Genovart. Method for manufacturing luminous hollow bodies for signs or the like. 4,058,584, Cl. 264-250.000.

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Altman, Nicholas M. Adjustable table. 4,058,066, Cl. 108-9.000.

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Amazonen-Werke H. Dreyer: *See*—
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American Cyanamid Company: *See*—
Cross, Barrington; and Walworth, Bryant Leonidas, 4,058,391, Cl. 71-92.000.
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American Hospital Supply Corporation: *See*—
Choksi, Pradip Vinobchandra; Johnston, Donald Leroy; and Seemayer, Walter, 4,058,121, Cl. 128-221.000.

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Amor, William H., Jr.; and Steffek, Robert J., to Picker Corporation. Telescopic column for X-ray apparatus. 4,057,891, Cl. 29-434.000.

Analytical Radiation Corporation: *See*—
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Anders, Wilfried, to Siemens Aktiengesellschaft. Method of producing a tantalum thin film capacitor. 4,058,445, Cl. 204-192.0SP.

Anderson, Arnold L., to Velsicol Chemical Corporation. Polymer compositions. 4,058,501, Cl. 260-45.75B.

Anderson, Dennis C.: *See*—
Stutelberg, Kenneth R.; and Anderson, Dennis C., 4,057,931, Cl. 47-66.000.

Ando, Kunio; Saito, Takemi; and Higuchi, Takeshi, to Fuji Photo Optical Co., Ltd. Color separating optical system for a television camera. 4,058,827, Cl. 358-55.000.

Andrews, Allen Howe; McPherson, James Norman; Burns, John Thomas, Jr.; and Hendrie, John Matthew, to Bourns, Inc. Differential pressure transducer. 4,058,788, Cl. 338-42.000.

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Antson, Jorma: *See*—
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Aoi, Hiroshi: *See*—
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Yukuta, Toshio; Ohashi, Takashi; Saito, Masumi; and Arai, Katsuhiko, 4,058,503, Cl. 260-47.0CP.

Arcamone, Federico; Di Marco, Aurelio; and Penco, Sergio, to Societa Farmaceutici Italia S.p.A. Adriamycins and uses thereof. 4,058,519, Cl. 424-180.000.

Arieh, Simon, to Battelle Memorial Institute. Belt conveyor. 4,058,204, Cl. 198-833.000.

Armstrong, Desmond Ross, to U.S. Philips Corporation. Pulse generating c ·uit. 4,058,743, Cl. 307-275.000.

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Balbo, Anthony M., to Westinghouse Electric Corporation. Elevator system including an elevator car having door operated sealing devices adjacent door opening. 4,058,191, Cl. 187-1.00R.

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Banks, Clarence K.; Crout, Prescott D.; and Homer, Paul B., to United States of America, Navy. Low frequency passive guidance method. 4,058,275, Cl. 244-3.150.

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Bauer, Kurt; Wittman, Gunther; Mussgay, Manfred; Irion, Eckart; and Geilhausen, Horst, to Bayer Aktiengesellschaft. Ethyleneimine inactivated organisms. 4,058,599, Cl. 424-92.000.

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Biedermann, Wolfgang, 4,058,571, Cl. 260-631.00H.
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Eue, Ludwig; and Schmidt, Robert R., 4,058,525, Cl. 544-182.000.
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Merz, Walter; and Schummer, Gunter, 4,058,526, Cl. 544-182.000.
Rasp, Christian; Scharfe, Gerhard; and Grolig, Johann, 4,058,556, Cl. 560-231.000.
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Thomas, Rudolf; Kramer, Wolfgang; Eue, Ludwig; Metzger, Carl; and Jager, Gerhard, 4,058,392, Cl. 71-106.000.
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Bazika, Vladimir; Prazak, Premysl; and Havelkova, Dana, to CKD Praha, Oborovy podnik. Apparatus for testing engine oil. 4,057,999, Cl. 73-53.000.

Bech, Johan H. Anchor rope. 4,058,049, Cl. 87-8.000.

Beck, Gilbert; Zuern, Ludwig; and Stahnecker, Erhard, to BASF Aktiengesellschaft. Automobile safety tires. 4,058,152, Cl. 152-310.000.

Becker, Philip S., to Valex Inc. Automatic drain for compressed air systems. 4,058,240, Cl. 222-368.000.

Beer, Gyorgy: *See*—
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Beery, Jack, to Burroughs Corporation. Strip length monitoring apparatus. 4,058,266, Cl. 242-54.00R.

Begin, Louis E.: *See*—
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Beisler, John A.; Abbasi, Mohamed M.; and Driscoll, John S., to United States of America, Health, Education and Welfare. Synthesis, structure, and antitumor activity of 5,6-dihydro-5-azacytidine. 4,058,602, Cl. 424-180.000.

Belaire, Richard C., to Ford Motor Company. Device for decreasing the start-up time for stirling engines. 4,057,962, Cl. 60-526.000.

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Belanger, James A., 4,057,866, Cl. 15-97.00B.

Belanger, James A., to Belanger, Inc. Apparatus for washing and drying motor vehicles. 4,057,866, Cl. 15-97.00B.

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Fraley, Phillip Edward, 4,058,779, Cl. 331-108.00R.
Nutt, Wendell Glenn; and Webster, George Harry, 4,058,669, Cl. 174-34.000.
Peterson, William Anders, 4,058,758, Cl. 363-80.000.

Bellamy, Winthrop D.; and Holub, Fred F., to General Electric Company. Decrystallization of cellulose. 4,058,411, Cl. 127-37.000.

Bellenberg, Heinz; Kucharzyk, Werner; Rohde, Wolfgang; and Siebert, Werner, to Bergwerksverband GmbH; and Didier Engineering GmbH. Arrangement for pneumatically regulating the introduction of substances into chambers. 4,058,230, Cl. 214-18.200.

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Bentley, Donald J.; and Raible, Donald A., to Bentley Laboratories, Inc. Oxygenator. 4,058,369, Cl. 23-258.50B.

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Berg, Marvin I.: *See*—
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Bellenberg, Heinz; Kucharzyk, Werner; Rohde, Wolfgang; and Siebert, Werner, 4,058,230, Cl. 214-18.200.
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Bermatov, Mikhail Albertovich: *See*—
Prutkovsky, Evgeny Nikolaevich; Bermatov, Mikhail Albertovich; Tarasov, Evgeny Alexandrovich; Ozerov, Valery Ilich; Fedosjuk, Alexandr Fedorovich; and Krokhin, Vladimir Andreevich, 4,057,966, Cl. 60-678.000.

Bermes, Rudolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Preparation of a concentrated solution of an anionic azo dye containing a sulfonic acid group. 4,058,517, Cl. 260-155.000.

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Besler, Ervin. True cut combination. 4,058,303, Cl. 269-315.000.

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Bewley, Homer G. Plier assembly. 4,057,863, Cl. 7-5.400.

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Hammitt, Frederick G.; Ahmed, Osman Saleh Mohamed; Bhatt, Niranjan Rasik; and Hwang, Jia-Bo Gilbert, 4,058,004, Cl. 73-86.000.

Bicicchi, Richard Thomas; and Melilli, Albert Samuel, to General Electric Company. Turbine bucket alloy. 4,058,417, Cl. 148-37.000.

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Bierenbaum, Harvey S.; Penoyer, John A.; and Zimmerman, Daniel, to Celanese Corporation. Simultaneous stretching of multiple plies of polymeric film. 4,058,582, Cl. 264-154.000.

Birk, James R., to Electric Power Research Institute, Inc. Recovery of lead from batteries. 4,058,396, Cl. 75-77.000.

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Bjorkholm, John Ernst; Bjorklund, Gary Carl; and Liao, Paul Foo-Hung, to Bell Telephone Laboratories, Incorporated. Method and apparatus for phase matching by adjustment of the fundamental frequencies. 4,058,739, Cl. 307-88.300.

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Black, Donald Kirkbright, to Hercules Incorporated. Stabilization with alkali metal compound material of certain thermally unstable DMT. 4,058,663, Cl. 560-3.000.

Blacker, Allen P.; and Schwartz, James W., to Zenith Radio Corporation. Electron gun having an extended field beam focusing and converging lens. 4,058,753, Cl. 315-368.000.

Blair, Calvin B.; and Hake, Kenneth A., to Kent Manufacturing Co., Inc. Tooth arrangement in rearwardly folding cultivators. 4,058,172, Cl. 172-311.000.

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Bloem, Gary. Wet comb. 4,057,901, Cl. 132-112.000.
Blom, Johannes Cornelis; and Tindall, Colin Edward, to Davidson & Co. Limited. Regenerative air preheaters and seal frame suspension control system therefor. 4,058,158, Cl. 165-9.000.
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Renth, Ernst-Otto; Mentrup, Anton; Schromm, Kurt; and Walland, Alexander, 4,058,642, Cl. 424-330.000.
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Boller, Arthur; and Scherrer, Hanspeter, to Hoffmann-La Roche Inc. Liquid crystalline isonitriles. 4,058,476, Cl. 252-299.000.
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Bonis, Maurice; and Roger, Bernard, to U.S. Philips Corporation. Complementary transistor structure having two epitaxial layers and method of manufacturing same. 4,058,825, Cl. 357-46.000.
Bonnemay nee Couture, Andree; Royon, Jean; Bereau, Jean; and Catonne, Jean-Claude, to Societe d'Etude pour la Regeneration de l'Acide Chlorhydrique SEPRAC. Process for the regeneration of spent pickling solutions. 4,058,441, Cl. 204-103.000.
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Brass, Robert L. Toy construction system having reusable distensible joining members. 4,057,886, Cl. 29-235.000.
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Breher, Rudolf, to BRECO Kunststoffverarbeitungs-GmbH & Co. KG. Method of and device for producing in a continuous operation endless driving belts of any desired circumferential length. 4,058,424, Cl. 156-137.000.
Brennan, Raymond J., to GTE Sylvania Incorporated. Method and apparatus for handling and orientation of fragile articles. 4,058,236, Cl. 221-163.000.
Brewer, Robert A. Connector for camera harnesses. 4,058,242, Cl. 224-5.00V.
Bridgestone Tire Company Limited: *See*—
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Brown, Clifford Gordon; and Sanderson, Brian Robert, to United States Borax & Chemical Corporation. Process for recovering boric acid. 4,058,588, Cl. 423-283.000.
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Brown, Richard N., to General Electric Company. Handle assembly. 4,058,338, Cl. 294-31.200.
Brown, Stephen Edward. Apparatus and method for increasing the horsepower of an internal combustion engine. 4,058,096, Cl. 123-119.0CG.
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Budzich, Tadeusz. Load responsive fluid control valves. 4,058,140, Cl. 137-596.130.
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Carson, Cyril W. Blade assembly with replaceable cutting edge. 4,058,173, Cl. 172-719.000.

Case, Patrick P.; and Gardner, David L., to Compression Coat Corporation. Pipe coating machine. 4,058,428, Cl. 156-429.000.

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Chamberlain, Monte; Comer, Glen S., Jr.; and Elliott, Fredrick H., to Caterpillar Tractor Co. Control linkage for a band type brake. 4,058,189, Cl. 188-77.00R.

Chambless, Leo B., to General Electric Company. Reverse cycle heat pump circuit. 4,057,977, Cl. 62-324.000.

Champion International Corporation: *See—*
Vincent, David N.; and Golden, Ronald, 4,058,434, Cl. 162-165.000.

Chandler, Craig S., to Phillips Petroleum Company. Sample preparation. 4,057,997, Cl. 73-23.100.

Chang, Clarence D.; and Grover, Shamsher S., to Mobil Oil Corporation. Conversion of methanol to gasoline components. 4,058,576, Cl. 260-673.000.

Chang, Louis H.: *See—*
Fravel, John C.; Chang, Louis H.; and Yoshikawa, Harunori, 4,058,195, Cl. 197-18.000.

Chang, Pei K.: *See—*
Concilio-Nolan, Mary C.; and Chang, Pei K., 4,058,510, Cl. 260-112.00R.

Chase, Marston. Adhesive picture mount. 4,057,923, Cl. 40-158.00R.

Chemie Linz Aktiengesellschaft: *See—*
Schonbeck, Rupert; Kloimstein, Engelbert; and Wittmann, Erwin, 4,058,390, Cl. 71-92.000.

Cheng, Paul J., to Phillips Petroleum Company. Filtering apparatus. 4,058,379, Cl. 55-302.000.

Cheung, Harry, to Union Carbide Corporation. Porous metal-alumina composite. 4,058,485, Cl. 252-466.0PT.

Chi, Chang Whan; Hoffman, Gordon Herman; and Eichhorn, Emil, to W. R. Grace & Co. Forming and crystallization process for molecular sieve manufacture. 4,058,586, Cl. 423-118.000.

Chiaramonte, Thomas J.: *See—*
Longman, Rodney A.; and Chiaramonte, Thomas J., 4,057,869, Cl. 15-250.320.

Chicago Roller Skate Company: *See—*
Ware, Robert R., Jr., 4,058,323, Cl. 280-11.10R.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT: *See—*
Zsolnai, Tibor; Lugosi, Gyorgy; Szepesi, Istvan; Bakonyi, Maria; Racz, Istvan; and Radvany nee Hegedus, Erzsebet, 4,058,608, Cl. 424-226.000.

Choksi, Pradip Vinobchandra; Johnston, Donald Leroy; and Seemayer, Walter, to American Hospital Supply Corporation. Vented needle for medical liquids. 4,058,121, Cl. 128-221.000.

Chopp, Peter G. Adjustable flashlight holder. 4,058,719, Cl. 362-190.000.

Christensen, Burton G.: *See—*
Cama, Lovji D.; Christensen, Burton G.; Karady, Sandor; and Sletzinger, Meyer, 4,058,661, Cl. 544-21.000.

Christians, Tom A.: *See—*
Staff, Charles H.; Kunert, Gale F.; and Christians, Tom A., 4,058,633, Cl. 426-315.000.

Christiansen, Torbe Falch, to Radiometer A/S. Electrochemical measuring electrode. 4,058,447, Cl. 204-195.00P.

Chudleigh, Walter H., Jr., to Control Data Corporation. MTI system and method. 4,058,809, Cl. 343-7.00A.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Hata, Shun-ichi; Mizuno, Koji; Nishii, Yasuho; Mitsuishi, Etsuko; and Shiba, Motoharu, 4,058,601, Cl. 424-180.000.
Mori, Takashi; Takaku, Sakae; Oi, Nobuhiro; Shindo, Minoru; Hirano, Takeaki; Kataoka, Shigeyuki; and Furuno, Kouji, 4,058,523, Cl. 544-165.000.

Ciba-Geigy AG: *See—*
Martin, Henry; Pissiotas, Georg; and Dittrich, Volker, 4,058,604, Cl. 424-211.000.

Ciba-Geigy Corporation: *See—*
Dexter, Martin; and Steinberg, David Herbert, 4,058,502, Cl. 260-45.85B.
Graf, Wilfried; and Schmid, Erich, 4,058,529, Cl. 260-251.00A.
Ilvespaa, Atso, 4,058,617, Cl. 424-270.000.
Karrer, Friedrich; and Farooq, Saleem, 4,058,627, Cl. 424-341.000.
Knell, Martin, 4,058,573, Cl. 260-653.10T.
Lohmann, Frank; Lugrin, Raymond; and Baumann, Hanspeter, 4,058,480, Cl. 252-301.210.
Meyer, Hans-Rudolf, 4,058,408, Cl. 106-176.000.
Mueller, Karl Friedrich, 4,058,537, Cl. 260-346.300.

Cincinnati Milacron Inc.: *See—*
Ondercin, Robert Michael; and Borzcik, Paul Stephen, 4,058,711, Cl. 364-101.000.

Citrin, Paul Stuart, to Dynatech Laboratories Incorporated. Method and apparatus for transferring liquid. 4,058,146, Cl. 141-1.000.

CKD Praha, Oborovy podnik: *See—*
Bazika, Vladimir; Prazak, Premysl; and Havelkova, Dana, 4,057,999, Cl. 73-53.000.

Claassen, Manfred, to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor diode. 4,058,824, Cl. 357-15.000.

Clancy, Timothy. Table rail. 4,058,280, Cl. 248-2.000.

Clark, Becky J.; and Seitz, Charles L., to Burroughs Corporation. Asynchronous self timed queue. 4,058,773, Cl. 328-37.000.

Clark, William E. Contact breaker assembly with breaker arm spacer block. 4,058,692, Cl. 200-31.00A.

Clatworthy, Edward Frederick: *See—*
Eiselstein, Herbert Louis; Clatworthy, Edward Frederick; and Smith, Darrell Franklin, Jr., 4,058,416. Cl. 148-32.000.

Clavell, Cesar: *See—*
Zirino, Alberto; Clavell, Cesar; and Huey, Kent, 4,058,446, Cl. 204-195.00R.

Clean Air Engineering, Inc.: *See—*
Stary, Marvin L.; Brown, Edward L.; and Pridonoff, Eric L., 4,058,147, Cl. 141-45.000.

Clites, Philip G., to United States of America, Interior. Cold crucible. 4,058,668, Cl. 13-32.000.

Cluett, Peabody & Co., Inc.: *See*—
Lawrence, Jackson, 4,058,375, Cl. 55-70.000.
Coffey, John R.: *See*—
Rogers, Robert N., 4,058,464, Cl. 210-356.000.
Cole, Carroll Richard: *See*—
Atherton, Robert Allan; and Cole, Carroll Richard, 4,058,174, Cl. 172-781.000.
Cole, Peter Harold: *See*—
Vaughan, Richard; and Cole, Peter Harold, 4,058,217, Cl. 209-74.00M.
Colgate-Palmolive Company: *See*—
Colodney, Daniel, 4,058,595, Cl. 424-50.000.
Crawford, Richard J.; and Robbins, Clarence R., 4,058,131, Cl. 132-7.000.
Nachtigal, Julius Harvey, 4,058,596, Cl. 424-50.000.
Colodney, Daniel, to Colgate-Palmolive Company. Stabilized toothpastes containing an enzyme. 4,058,595, Cl. 424-50.000.
Columbus McKinnon Corporation: *See*—
Schreyer, Kenneth D.; Rohosy, Soma M.; and Manney, Charles J., 4,058,291, Cl. 254-74.000.
Combustion Engineering Inc.: *See*—
Anthony, Andrew J., 4,058,436, Cl. 176-78.000.
Comdial Corporation: *See*—
Lake, Don W., 4,058,805, Cl. 340-347.0DA.
Comer, Glen S., Jr.: *See*—
Chamberlain, Monte; Comer, Glen S., Jr.; and Elliott, Fredrick H., 4,058,189, Cl. 188-77.00R.
Commercial Shearing, Inc.: *See*—
Petro, John D., 4,058,135, Cl. 137-106.000.
Commissariat a l'Energie Atomique: *See*—
Vrillon, Bernard, 4,058,188, Cl. 188-1.00C.
Communications Patents Limited: *See*—
Gargini, Eric John, 4,058,770, Cl. 325-308.000.
Compression Coat Corporation: *See*—
Case, Patrick P.; and Gardner, David L., 4,058,428, Cl. 156-429.000.
Con-Spec Devices Inc.: *See*—
Walski, Stanley, 4,058,285, Cl. 249-216.000.
Concast Incorporated New York: *See*—
Streubel, Hans; Backhaus, Karl; and John, Wolfgang, 4,058,154, Cl. 164-82.000.
Concilio-Nolan, Mary C.; and Chang, Pei K., to Stauffer Chemical Company. Process for separating sodium lauryl sulfate (SLS) from a SLS/protein complex. 4,058,510, Cl. 260-112.00R.
Conliff, Vincent B., deceased: *See*—
Rogers, Robert N., 4,058,464, Cl. 210-356.000.
Conrad, Bernhard: *See*—
Reiss, Karl Hans; Kotschak, Otto; and Conrad, Bernhard, 4,058,721, Cl. 250-213.0VT.
Contant, Claude. Anti-dazzle eye shade. 4,057,852, Cl. 2-12.000.
Continental Oil Company: *See*—
Cabbiness, Dale K., 4,058,366, Cl. 23-230.0EP.
Sias, Roy C., 4,058,467, Cl. 252-8.55D.
Stode, Ralph A., 4,058,015, Cl. 73-395.000.
Control Data Corporation: *See*—
Chudleigh, Walter H., Jr., 4,058,809, Cl. 343-7.00A.
Thompson, John R., 4,058,829, Cl. 358-84.000.
Copal Company Limited: *See*—
Yamazaki, Masaru, 4,058,807, Cl. 340-347.0DA.
Copeland, William G. Vehicle headlight warning circuit. 4,058,793, Cl. 340-52.00D.
Corbic nee Busnel, Bernadette Corbic, to Societe: Toscara Anstalt. Manufacture of white cheese or yogurt. 4,058,630, Cl. 426-36.000.
Cordell, Carl R., Jr. Fishing rod. 4,057,926, Cl. 43-18.0GF.
Corman, James C.; and Walmet, Gunnar E., to General Electric Company. Heat transfer device. 4,058,160, Cl. 165-105.000.
Cotrel, Claude: *See*—
Barreau, Michel; Cotrel, Claude; and Jeanmart, Claude, 4,058,611, Cl. 424-250.000.
Cousse, Henri; Mouzin, Gilbert; and Rieu, Jean-Pierre, to Pierre Fabre S.A. Aromatic keto acids and derivatives having analgetic, antiinflammatory, and hypocholesterolemizing action. 4,058,558, Cl. 260-515.00A.
Cox, David A.; and Shroot, Braham, to Pfizer Inc. 7-D-(α-Acylaminoarylacetamido)-cephalosporanic acid derivatives. 4,058,610, Cl. 424-246.000.
Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., to International Telephone and Telegraph Corporation. Packet-switched data communications system. 4,058,672, Cl. 178-3.000.
Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., to International Telephone and Telegraph Corporation. Packet-switched facsimile communications system. 4,058,838, Cl. 358-257.000.
Craig, Helen C. Covered garment hanger. 4,058,241, Cl. 223-98.000.
Crawford, Richard J.; and Robbins, Clarence R., to Colgate-Palmolive Company. Improving hair body and manageability with diperisophthalic acid. 4,058,131, Cl. 132-7.000.
Crescent Hosiery Mills: *See*—
Runac, John J., 4,057,981, Cl. 66-185.000.
Crickmer, Charles D., to Otis Engineering Corporation. Well setting tool. 4,058,166, Cl. 166-315.000.
Crimes, Peter B., to Kennecott Copper Corporation. Pyrometallurgical system for solid-liquid contacting. 4,058,394, Cl. 75-61.000.
Crivello, James V., to General Electric Company. Cationically polymerizable compositions containing group VIa onium salts. 4,058,400, Cl. 96-86.00P.
Crivello, James V., to General Electric Company. Photocurable compositions containing group via aromatic onium salts. 4,058,401, Cl. 96-115.00R.
Crocket, James H. Metering device. 4,058,006, Cl. 73-113.000.
Cross, Barrington; and Walworth, Bryant Leonidas, to American Cyanamid Company. 1,2-Dialkyl-3,4,5-trisubstituted pyrazolium salts as herbicidal agents. 4,058,391, Cl. 71-92.000.
Crossbow, Inc.: *See*—
Trott, David H., 4,058,013, Cl. 73-352.000.
Crouse-Hinds Company: *See*—
Carlisle, Roger P., 4,058,358, Cl. 339-44.00M.
Crout, Prescott D.: *See*—
Banks, Clarence K.; Crout, Prescott D.; and Homer, Paul B., 4,058,275, Cl. 244-3.150.
Crowle, Brian, to RCA Corporation. Over-current prevention circuitry for transistor amplifiers. 4,058,775, Cl. 330-267.000.
Crown Manufacturing Company: *See*—
Eash, George, 4,058,155, Cl. 164-152.000.
Cruse, Bernd, to International Business Machines Corporation. Article handling device. 4,058,223, Cl. 214-1.0BB.
Curtis, Robert Bartlett, to Bell Telephone Laboratories, Incorporated. Telephone message timing system. 4,058,680, Cl. 179-7.10R.
Curtiss, George C. Pipe-cigaret. 4,058,130, Cl. 131-192.000.
Curtiss-Wright Corporation: *See*—
Gavrun, Michael T.; and Loyd, Robert W., Jr., 4,058,321, Cl. 277-81.00P.
Cutler-Hammer, Inc.: *See*—
Anthony, Romuald, 4,058,723, Cl. 250-235.000.
Czajlik, Eva, nee Csizer: *See*—
Kekesy, Tibor; Szeberenyi, Szabolcs; Beer, Gyorgy; Dudas, Antal; Hajos, Gyorgy; Szporny, Laszlo; and Czajlik, Eva, nee Csizer, 4,058,522, Cl. 260-239.570.
D. H. Baldwin Company: *See*—
Wade, David R.; and Munch, Walter, Jr., 4,058,042, Cl. 84-1.010.
Dahlmann, Julius: *See*—
Frohlich, Alfons; Dahlmann, Julius; and Volter, Gunter, 4,058,145, Cl. 139-384.00B.
Dahlquist, Emil F., to Radiant Grate, Inc. Grate. 4,058,108, Cl. 126-137.000.
Dai Nippon Toryo Co., Ltd.: *See*—
Jinnai, Toshio; Matusmoto, Goro; and Iwasaki, Kazuhito, 4,058,475, Cl. 252-299.000.
Daimler-Benz Aktiengesellschaft: *See*—
Burckhardt, Manfred H., 4,058,346, Cl. 303-22.00R.
Wiegard, Klaus, 4,058,157, Cl. 165-8.000.
Dal Negro, Ruggero, to Italo Americana Prentice S.p.A. Tape-supported slide-fastener element. 4,058,144, Cl. 139-384.00B.
D'Alelio, Gaetano Francis, to University of Notre Dame du Lac. Chain-extending amine end-capped polyimides. 4,058,505, Cl. 260-47.0CP.
Dallaire, Lucien. Roller skate with maneuverability adjustments. 4,058,324, Cl. 280-11.220.
Dalton, James H.; Stover, S. Dalton; and Roney, Robert M., to Lok-A-Wat, Inc. Entry-controlled energy system. 4,058,740, Cl. 307-116.000.
Dan Wesson Arms, Inc.: *See*—
Brouthers, Paul E., 4,058,050, Cl. 89-14.00C.
Danahy, Philip J. Hull foils with hydrodynamic righting forces. 4,058,076, Cl. 114-281.000.
Danfoss A/S: *See*—
Hallgreen, Knud Julius, 4,058,254, Cl. 236-68.00B.
Danilov, Alexandr Ivanovich: *See*—
Bykhovsky, David Grigorievich; and Danilov, Alexandr Ivanovich, 4,058,698, Cl. 219-121.00P.
Dano, Arnold Vincent; Tomaszewski, Jerry James; and Friedrichs, Jerome Peter, to Motorola, Inc. Thermally stabilized crystal mounting assembly. 4,058,744, Cl. 310-343.000.
Darjany, John C., to R. D. Products, Inc. Magnetic-type information card and method and apparatus for encoding and reading. 4,058,839, Cl. 360-2.000.
Daumas, Jean-Claude, to Rhone-Progil. Process for the oxychlorination of hydrocarbons with ammonium chloride. 4,058,574, Cl. 260-659.00A.
Davidson & Co. Limited: *See*—
Blom, Johannes Cornelis; and Tindall, Colin Edward, 4,058,158, Cl. 165-9.000.
Debourge, Jean-Claude; and Trochme, Martine, to Philagro S.A. Fungicidal treatment and composition. 4,058,600, Cl. 424-128.000.
Decca Record Company Ltd.: *See*—
O'Brien, William Joseph, 4,058,742, Cl. 307-260.000.
DeCesaris, Adolph. Earring with ornament of non-rigid plastic having resilient filler. 4,057,980, Cl. 63-13.000.
Defiance - Azon Corporation: *See*—
McNeil, Sharon S.; Bloomquist, Carl R.; and Johnston, Robert C., 4,058,399, Cl. 96-75.000.
DeFilippo, Louis M.: *See*—
Patterson, Francis J.; and DeFilippo, Louis M., 4,058,053, Cl. 100-26.000.
DeLaMater, George B., to Air Products and Chemicals, Inc. Flue gas conditioning with spiking gas containing sulfur trioxide. 4,058,372, Cl. 55-5.000.
Delle-Alsthom: *See*—
Deville, Robert, 4,058,848, Cl. 361-128.000.
Delle Donne, Roberto; and Musumeci, Luigi, to Societa Italiana

Telecomunicazioni Siemens S.p.A. Expandable memory for PCM signal transmission. 4,058,682, Cl. 179-15.0AF.
del Toro, James J.; and Bussjager, Rudy C., to Carrier Corporation. Heat pump system. 4,057,975, Cl. 62-324.000.
del Toro, James J.; and Bussjager, Rudy C., to Carrier Corporation. Heat exchanger. 4,057,976, Cl. 62-324.000.
DeMarinis, Robert M., to SmithKline Corporation. 7-Dithioacetamido cephalosporins. 4,058,609, Cl. 424-246.000.
Demas, Nickolas P.; Duncan, William E.; Gephart, Norman S.; and Waltz, William T. S., to Wagner Electric Corporation. Filament shield for sealed headlamp and mounting method therefor. 4,058,749, Cl. 313-326.000.
DeMuro, Frank P.: *See—*
Rapino, Norman G.; and DeMuro, Frank P., 4,057,907, Cl. 34-4.000.
Denoor, Gaston; and Thillet, Georges, to B.V.S. Apparatus for winding plural strips under tension. 4,058,278, Cl. 242-7.220.
Denzinger, Walter; Seelert, Kurt; and Herrle, Karl, to BASF Aktiengesellschaft. Manufacture of low molecular weight poly-N-vinylpyrrolidone-2. 4,058,655, Cl. 526-212.000.
de Saint Palais, Jacques; Laffont, Paul; and Mourlevat, Jean, to Societe Nationale Elf Aquitaine (Production). Riser pipe for pivotally attached structure used to extract petroleum from beneath a body of water. 4,058,137, Cl. 137-236.00S.
DeSoto, Inc.: *See—*
Sekmakas, Kazys; and Hesler, Kenneth K., 4,058,499, Cl. 260-29.6RW.
Detroit Autobody Equipment, Inc.: *See—*
Wolgast, Raymond P.; and Lamanna, Joe, 4,057,994, Cl. 72-441.000.
Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Haschke, Heinz; Schreyer, Gerd; Schwarze, Werner; and Suchsland, Helmut, 4,058,662, Cl. 544-208.000.
Deville, Robert, to Delle-Alsthom. Cut-off chamber of a lightning protector. 4,058,848, Cl. 361-128.000.
DeVries, Roy F.; and Snyder, William H. Sublimation transfer and method. 4,058,644, Cl. 428-200.000.
Dexter, Martin; and Steinberg, David Herbert, to Ciba-Geigy Corporation. Stabilized compositions containing hindered hydroxyalkanoates. 4,058,502, Cl. 260-45.85B.
Diamond International Corporation: *See—*
Williams, Glenn V., Jr., 4,058,435, Cl. 162-371.000.
Dickey-john Corporation: *See—*
Bachman, Wesley J., 4,058,712, Cl. 364-564.000.
Didier Engineering GmbH: *See—*
Bellenberg, Heinz; Kucharzyk, Werner; Rohde, Wolfgang; and Siebert, Werner, 4,058,230, Cl. 214-18.200.
Dietz, Frederick P., to Jacobus, Charles; Jacobus, Josephine; Wiltgen, Leroy; and Wiltgen, Rita, part interest to each. Nail polish bottle opener. 4,058,132, Cl. 132-73.000.
Dietzel, Walter; and Matusch, Siegfried, to Braunschweigische Maschinenbauanstalt. Counter-current leaching tower. 4,058,410, Cl. 127-5.000.
DiFazio, Joseph, to Acorn Building Components, Inc. Astragal and flush bolt assembly. 4,058,332, Cl. 292-147.000.
Di Marco, Aurelio: *See—*
Arcamone, Federico; Di Marco, Aurelio; and Penco, Sergio, 4,058,519, Cl. 424-180.000.
DiMercurio, John S.: *See—*
Paterson, Malcolm M.; DiMercurio, John S.; and Mooradian, Albert H., 4,057,909, Cl. 34-76.000.
Di Noia, Francesco, to Idea Didattica Editrice. Instrument for facilitating the calculation of equivalent values. 4,057,912, Cl. 35-31.00E.
Director-General of the Agency of Industrial Science and Technology: *See—*
Futai, Norio; Murakami, Toshio; Takahara, Yoshimasa; and Kumazawa, Toshiharu, 4,058,481, Cl. 252-321.000.
Dirks, Wolfgang Gerhard, to Burroughs Corporation. Low-mass short-stroke voice-coil actuator for integrated disk file module. 4,058,844, Cl. 360-106.000.
DiToro, Michael J., to General Signal Corporation. Equalization by adaptive processing operating in the frequency domain. 4,058,713, Cl. 364-724.000.
Dittrich, Volker: *See—*
Martin, Henry; Pissiotas, Georg; and Dittrich, Volker, 4,058,604, Cl. 424-211.000.
Dodson, Stuart Alan: *See—*
Douglas, George Henry; Studt, William Lyon; and Dodson, Stuart Alan, 4,058,557, Cl. 260-501.140.
Domtar Limited: *See—*
Akkerman, Allardus A., 4,058,250, Cl. 229-52.00B.
Buck, Stanley Edward, 4,058,249, Cl. 229-34.0HW.
McArdle, James Michael Smith, 4,058,248, Cl. 229-30.000.
Dornier GmbH.: *See—*
Altmann, Helmut, 4,058,710, Cl. 364-433.000.
Kozakiewicz, Hugo; and Reuter, Wolfgang, 4,058,277, Cl. 244-17.170.
Douglas, George Henry; Studt, William Lyon; and Dodson, Stuart Alan, to William H. Rorer, Inc. Amidinoureas. 4,058,557, Cl. 260-501.140.
Douglas, Leon L. Apparatus for applying transfers to fabrics. 4,058,055, Cl. 101-10.000.
Douglas, Patrick Joseph: *See—*
O'Neill, Patrick; Douglas, Patrick Joseph; and Mallaghan, Michael Lee, 4,058,198, Cl. 198-313.000.
Dow Chemical Company, The: *See—*
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McKendry, Lennon H., 4,058,533, Cl. 260-294.80F.
Drackett Company, The: *See—*
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Draeger, William H.: *See—*
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Dravo Corporation: *See—*
Briggs, Aubrey C., 4,058,203, Cl. 198-509.000.
Drayton, Walker E., to American Chain & Cable Company, Inc. Theft-deterrent chain locking device. 4,057,982, Cl. 70-14.000.
Dresser Industries, Inc.: *See—*
Langford, James W., Jr.; and Keller, Wilbur S., 4,058,177, Cl. 175-374.000.
Dressler, Bruno Jean-Marie. Apparatus for hauling a flexible, textile or metal rope, cable or the like. 4,058,294, Cl. 254-167.000.
Drewery, John Oliver; and Weston, Martin, to Marconi Company Limited, The; and Standard Telephones & Cables Limited. Noise reduction in television signals. 4,058,836, Cl. 358-167.000.
Drews, Ulrich; Kraus, Bernd; Singer, Erich; and Schnurle, Hans, to Robert Bosch GmbH. Method and apparatus for RPM limitation in internal combustion engines. 4,058,106, Cl. 123-198.0DB.
Dreyer, Heinz, to Amazonen-Werke H. Dreyer. Attaching device for mounting of a broadcast fertilizer spreader on a tractor. 4,058,180, Cl. 180-14.00R.
Driscoll, John S.: *See—*
Beisler, John A.; Abbasi, Mohamed M.; and Driscoll, John S., 4,058,602, Cl. 424-180.000.
D'Silva, Themistocles D. J., to Union Carbide Corporation. N-substituted cyanoalkane-sulfenyl (and thiosulfenyl)-N-alkyl carbamoyl halides. 4,058,549, Cl. 260-465.400.
Dual Gebruder Steidinger: *See—*
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Dudas, Antal: *See—*
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Dudzinski, Zdzislaw W.: *See—*
Wakeman, Reginald L.; Dudzinski, Zdzislaw W.; and Lada, Arnold, 4,058,488, Cl. 252-542.000.
Dukic, Ferdinando V., to United States of America, Army. Gravity-deployed munition with a mechanical gravity-controlled switch. 4,058,060, Cl. 102-8.000.
Dulaney, Eugene L.: *See—*
Jacobus, David P.; Dulaney, Eugene L.; and Grier, Nathaniel, 4,058,624, Cl. 424-330.000.
Jacobus, David P.; Dulaney, Eugene L.; and Grier, Nathaniel, 4,058,625, Cl. 424-325.000.
Dulat, Marcel Louis: *See—*
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Dunbar, Joseph E.; and Begin, Louis E., to Dow Chemical Company, The. Aminoalkylthiopyridazine compounds. 4,058,520, Cl. 260-239.00B.
Duncan, Charles; and Hopkins, Richard H., to Westinghouse Electric Corporation. Infrared temperature control of Czochralski crystal growth. 4,058,429, Cl. 156-601.000.
Duncan, William E.: *See—*
Demas, Nickolas P.; Duncan, William E.; Gephart, Norman S.; and Waltz, William T. S., 4,058,749, Cl. 313-326.000.
Dunn, Earl F.; Erskine, Henry; and Hooper, Edward, to Singer Company, The. Sewing machine presser bar mechanism. 4,058,071, Cl. 112-235.000.
Dunn, Robert T.; Brown, William M.; and Ruddy, John M., to Astech, Inc. Remote signalling to a telephone line utilizing power line carrier signals. 4,058,678, Cl. 179-2.50R.
Du Pont de Nemours, E. I., and Company: *See—*
Eigenbrode, George Thomas, 4,057,879, Cl. 24-230.00R.
Durand, James C., to Caterpillar Tractor Co. Maximum temperature range indicator. 4,058,014, Cl. 73-358.000.
Durth, Wilfried, to Buderus'sche Eisenwerke Aktiengesellschaft. Method of treating a foodstuff in an oven with moisture. 4,058,635, Cl. 426-509.000.
Duska, Joseph J.; and McGill, Paul E., to Midland-Ross Corporation. Screw extruder with an enlarged feed section. 4,058,298, Cl. 366-76.000.
Dussel, Wilhelm: *See—*
Jung, Hans; Kovacs, Jenoe; Dussel, Wilhelm; and Lehmann, Helmut, 4,058,640, Cl. 427-118.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Ackermann, Otto; Bleh, Otto, deceased; and Rogler, Walter, 4,058,553, Cl. 560-180.000.
Dynatech Laboratories Incorporated: *See—*
Citrin, Paul Stuart, 4,058,146, Cl. 141-1.000.
Dyson, James, to Kirk-Dyson Designs Ltd. Ground engaging member for movable structures. 4,058,344, Cl. 301-7.000.
Eash, George, to Crown Manufacturing Company. Portable centrifugal casting machine. 4,058,155, Cl. 164-152.000.
Eastman Kodak Company: *See—*
Ladd, John H., 4,058,828, Cl. 358-80.000.
Echlin Manufacturing Company, The: *See—*
Klimek, Boleslaw M., 4,058,345, Cl. 303-6.00M.
Eckman, Ronald E. Dispenser. 4,058,238, Cl. 222-305.000.

Edson Tool and Manufacturing Company, Inc.: *See*—
Prather, Joseph E.; and Khalifa, Ramzi A., 4,058,334, Cl. 292-241.000.
Edwards, Harrison F., to Norwich Laboratory, Inc. Combination isobaric steam-heater and enclosure for use with fireplaces. 4,058,107, Cl. 126-121.000.
Edwards, Robert F.: *See*—
Mole, Cecil J.; and Edwards, Robert F., 4,058,746, Cl. 310-10.000.
Ehara, Toshiyasu: *See*—
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, 4,058,736, Cl. 250-573.000.
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, 4,058,737, Cl. 250-573.000.
Eichhorn, Emil: *See*—
Chi, Chang Whan; Hoffman, Gordon Herman; and Eichhorn, Emil, 4,058,586, Cl. 423-118.000.
Eicker, Karl G.: *See*—
Schulz, Siegfried; Eicker, Karl G.; and Reinke, August, 4,058,693, Cl. 200-67.00F.
Eigenbrode, George Thomas, to Du Pont de Nemours, E. I., and Company. Headers with insertable latch members. 4,057,879, Cl. 24-230.00R.
Eisai Co., Ltd.: *See*—
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, 4,058,736, Cl. 250-573.000.
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, 4,058,737, Cl. 250-573.000.
Eiselstein, Herbert Louis; Clatworthy, Edward Frederick; and Smith, Darrell Franklin, Jr., to Huntington Alloys, Inc. Matrix-stiffened heat and corrosion resistant wrought products. 4,058,416, Cl. 148-32.000.
Eisenberg, Robert M., to Singer Company, The. Simulated training system that utilizes operational equipment. 4,057,913, Cl. 35-12.00B.
Eitel, Frederick G.: *See*—
Trenschel, Donald R.; and Eitel, Frederick G., 4,058,263, Cl. 239-551.000.
El Paso Products Company: *See*—
Mims, Samuel S., 4,058,555, Cl. 560-191.000.
Elam, Robert R.: *See*—
Muehldorf, Eugen I.; and Elam, Robert R., 4,058,767, Cl. 324-73.00R.
Electric Power Research Institute: *See*—
Kurz, Robert A.; and Whirlow, Donald K., 4,058,373, Cl. 55-16.000.
Electric Power Research Institute, Inc.: *See*—
Birk, James R., 4,058,396, Cl. 75-77.000.
Gordon, Hayden S., 4,058,024, Cl. 74-572.000.
Electro-Thermal Corporation: *See*—
Jerles, James B., 4,058,702, Cl. 219-321.000.
Elek, Stephen Dyonis: *See*—
Stern, Harold; and Elek, Stephen Dyonis, 4,058,598, Cl. 424-89.000.
Elektro-Physik Hans Nix & Dr. -Ing. Erich Steingroever KG: *See*—
Steingroever, Erich, 4,058,763, Cl. 324-205.000.
Elkins, Johnny C.; and Hanz, Marvin C. Window rack. 4,058,221, Cl. 211-87.000.
Elliott, Fredrick H.: *See*—
Chamberlain, Monte; Comer, Glen S., Jr.; and Elliott, Fredrick H., 4,058,189, Cl. 188-77.00R.
Elliott, John: *See*—
Stingl, Hans Alfred; and Elliott, John, 4,058,515, Cl. 260-151.000.
Elmeg Elektro-Mechanik GmbH: *See*—
Reuting, Hans-Werner, 4,058,783, Cl. 335-276.000.
Elmendorf Research, Inc.: *See*—
Etzold, Roland, 4,058,201, Cl. 198-382.000.
End Devices, Inc.: *See*—
Welton, Barry S.; Westerman, Granval W.; and Hill, Michael E., 4,058,757, Cl. 318-474.000.
Enebrad, Lois: *See*—
McKee, Paul, deceased, 4,058,465, Cl. 210-356.000.
Engeler, William E., to General Electric Company. Surface charge signal processing apparatus. 4,058,717, Cl. 364-824.000.
Enyeart, Lyle F. Apparatus for aerating comminuted matter such as soil. 4,057,933, Cl. 47-79.000.
Epstein, Harold M.: *See*—
Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; and Gallagher, William J., 4,058,486, Cl. 250-493.000.
Erskine, Henry: *See*—
Dunn, Earl F.; Erskine, Henry; and Hooper, Edward, 4,058,071, Cl. 112-235.000.
ESCO Corporation: *See*—
Smith, Floyd O., 4,058,023, Cl. 74-243.0DR.
Esec Sales S.A.: *See*—
Nicklaus, Karl, 4,058,246, Cl. 228-121.000.
Eskeli, Michael. Thermodynamic machine with step type heat addition. 4,057,965, Cl. 60-650.000.
Estaque, Andre F., to Societe Anonyme Automobiles Citroen. Transmission-regulating device for motor vehicle. 4,058,028, Cl. 74-865.000.
Estaque, Andre F., to Societe Anonyme Automobiles Citroen. Transmission-regulating device for motor vehicle. 4,058,029, Cl. 74-865.000.
Eta A.G. Ebauches-Fabrik: *See*—
Giger, Urs; and Perrot, Friedrich, 4,057,885, Cl. 29-177.000.
Ethyl Corporation: *See*—
Malec, Robert E., 4,058,468, Cl. 252-46.700.
Walter, Thomas J., 4,058,560, Cl. 260-535.00P.
Ethylene Plastique: *See*—
Boucheron, Bernard; and Gosset, Emile, 4,058,653, Cl. 526-159.000.
Etter-Felix, Hansruedi. Arrangement for monitoring pneumatic tire inflation pressure. 4,058,009, Cl. 73-146.800.
Ettridge, John P. Child's car seat. 4,058,342, Cl. 297-250.000.
Etzold, Roland, to Elmendorf Research, Inc. Method and apparatus for orienting wood strands into parallelism. 4,058,201, Cl. 198-382.000.
Eue, Ludwig: *See*—
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Eue, Ludwig; and Schmidt, Robert R., 4,058,525, Cl. 544-182.000.
Thomas, Rudolf; Kramer, Wolfgang; Eue, Ludwig; Metzger, Carl; and Jager, Gerhard, 4,058,392, Cl. 71-106.000.
Eunipp AG.: *See*—
Flisch, Hermann, 4,058,035, Cl. 82-3.000.
Evans, Albert E. J.; and Turner, Peter G., to Koninklijke Emballage Industrie Van Leer B.V. Light-weight, flexible, easy-open, impermeable package system. 4,058,632, Cl. 426-126.000.
Evans, David A., to University of California, The Regents of the. Cyclopentene sulfoxides. 4,058,567, Cl. 260-607.00A.
Exel Oy: *See*—
Aho, Yrjo, 4,057,856, Cl. 2-209.000.
Exner, Rainer, to Sartorius-Werke GmbH. Vibrating wire measuring instrument. 4,058,007, Cl. 73-141.00A.
Exxon Research & Engineering Co.: *See*—
Cahn, Robert P.; and Longwell, John P., 4,058,575, Cl. 260-666.00P.
Ilnyckyj, Stephan, 4,058,371, Cl. 44-62.000.
Park, Im K., 4,058,581, Cl. 264-136.000.
Potter, Gordon C., 4,058,148, Cl. 141-198.000.
Sarsten, Jan A., 4,057,972, Cl. 62-23.000.
Serratore, Joseph; King, Laurence F.; Sutherland, Thomas H.; and Wallace, James R., 4,058,495, Cl. 260-17.00A.
Smith, Stuart B.; McAlpin, James J.; Peruyero, Jose M. A.; Hazelton, Ronald L.; and Upchurch, Edward F., 4,058,652, Cl. 526-68.000.
Fabel, Dolores M.: *See*—
Goodrich, Harold E.; and Fabel, Dolores M., 4,058,292, Cl. 254-88.000.
Fabriques de Tabac Reunies S.A.: *See*—
Beringer, Monique; and Sporri, Heinz, 4,058,129, Cl. 131-140.00C.
Fabritz, Robert E. Fuel economizer for cabureted internal combustion engines. 4,058,102, Cl. 123-141.000.
Fahlen, Theodore S.; and Kirk, Russell F., to GTE Sylvania Incorporated. High power gas transport laser. 4,058,778, Cl. 331-94.50G.
Fairand, Barry P.: *See*—
Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; and Gallagher, William J., 4,058,486, Cl. 250-493.000.
Fairmont Foods Company: *See*—
Staff, Charles H.; Kunert, Gale F.; and Christians, Tom A., 4,058,633, Cl. 426-315.000.
Fajardo, Raoul J. Cylindrical head joint with acoustic wedging for concert flutes. 4,058,046, Cl. 84-384.000.
Falk, Edward J., to Wagner Electric Corporation. Pressure distribution valve. 4,058,136, Cl. 137-110.000.
Fancher, Llewellyn W., to Stauffer Chemical Company. Process for manufacturing phosphono imidates. 4,058,535, Cl. 260-326.00E.
Far Out Products, Ltd.: *See*—
Stahl, Michael A., 4,057,985, Cl. 70-231.000.
Farooq, Saleem: *See*—
Karrer, Friedrich; and Farooq, Saleem, 4,058,627, Cl. 424-341.000.
Fass, Carl, to Intertrac Viehmann & Co. Bearing seal for endless tracks. 4,058,322, Cl. 277-96.100.
Faulin, Antonio. Ski bindings. 4,058,326, Cl. 280-617.000.
Faulkner, Duane Harold; Smith, Harvell Morton; and Howard, Larry Edward, to Johns-Manville Corporation. Method and apparatus for eliminating external hot gas attenuation in the rotary fiberization of glass. 4,058,386, Cl. 65-6.000.
Fedders Corporation: *See*—
Giurlando, Angelo C.; and Richardson, David, 4,058,361, Cl. 417-312.000.
Fedosjuk, Alexandr Fedorovich: *See*—
Prutkovsky, Evgeny Nikolaevich; Bermatov, Mikhail Albertovich; Tarasov, Evgeny Alexandrovich; Ozerov, Valery Ilich; Fedosjuk, Alexandr Fedorovich; and Krokhin, Vladimir Andreevich, 4,057,966, Cl. 60-678.000.
Feen, Oriin J. Method of removing broken threaded fasteners. 4,057,890, Cl. 29-427.000.
Fein, Marvin M.; Williams, Earl P.; and Field, Nathan D., to GAF Corporation. System for sustained release of phenolic material from porous granules of insoluble polymeric phenolic complexes. 4,058,462, Cl. 210-289.000.
Fenley, William Franklin, Jr.: *See*—
Martin, Lincoln A.; and Fenley, William Franklin, Jr., 4,058,791, Cl. 340-15.5MC.
Fenoglio, Francesco, to Societa Italiana Telecomunicazioni SIEMENS S.p.A. Expandable memory for asynchronous PCM multiplexer. 4,058,683, Cl. 179-15.0AF.
Ferag AG: *See*—
Reist, Walter; Hansch, Egon; and Gosslinghoff, Reinhard, 4,058,202, Cl. 198-482.000.
Ferguson, Marvin D. Engine cylinder sleeve puller and method. 4,057,889, Cl. 29-427.000.
Fettel, Bruce E., to Shiley Laboratories, Inc. Heart valve with arcuate occluder. 4,057,857, Cl. 3-1.500.

Fiat-Allis Construction Machinery, Inc.: *See—*
Murphy, Bernard J., 4,058,351, Cl. 305-54.000.
Field, Nathan D.: *See—*
Fein, Marvin M.; Williams, Earl P.; and Field, Nathan D., 4,058,462, Cl. 210-289.000.
Fields, Louis G. Time perception device. 4,058,113, Cl. 128-2.00N.
Filtrol Corporation: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,058,484, Cl. 252-455.00Z.
Firth, Jack Graham; Jones, Thomas Alwyn; and Rimmington, Brenda, to National Research Development Corporation. Systems for monitoring the composition of exhaust gases. 4,057,996, Cl. 73-23.000.
Fischer, Artur; and Fischer, Klaus, to Fischer, Artur. Tool and method for drilling a hole with an increased cross-sectional area. 4,058,176, Cl. 175-61.000.
Fischer, Klaus: *See—*
Fischer, Artur; and Fischer, Klaus, 4,058,176, Cl. 175-61.000.
Fischer, Roman: *See—*
Goetz, Norbert; and Fischer, Roman, 4,058,536, Cl. 260-340.700.
Fisher, Martin John, to British Hydromechanics Research Association, The. Slotted worktable. 4,058,040, Cl. 83-177.000.
Fisk, Robert W.: *See—*
Frind, Gerhard; Fisk, Robert W.; and McLaughlin, Michael H., 4,058,785, Cl. 337-204.000.
Fitzgerald, William Joseph; Shelton, Glenmore Lorraine, Jr.; and Wolfe, Robert Nolan, to International Business Machines Corporation. System for converting a rough sketch to a finished drawing. 4,058,849, Cl. 364-520.000.
Flanders, Robert D. Process for making a reinforced board from lignocellulosic particles. 4,058,580, Cl. 264-113.000.
Fleming, John O. Telephone attachment. 4,058,686, Cl. 179-90.0AT.
Fletcher, Gerald M., to Xerox Corporation. Detack and stripping system. 4,058,306, Cl. 271-80.000.
Flisch, Hermann, to Eunipp AG. Automatic lathe. 4,058,035, Cl. 82-3.000.
Florian, John, to Mobil Oil Corporation. Commodity packaging tray. 4,058,247, Cl. 229-2.50R.
FMC Corporation: *See—*
Wright, John F.; and Cannan, Terrance M., 4,058,067, Cl. 111-1.000.
Focke, Heinz. Cardboard container for bottles and the like. 4,057,950, Cl. 53-26.000.
Foley, Richard Gregory, to Harris Corporation. Cylinder folder. 4,058,304, Cl. 270-79.000.
Ford Motor Company: *See—*
Belaire, Richard C., 4,057,962, Cl. 60-526.000.
King, Lamar L., II, 4,058,380, Cl. 55-387.000.
Forsen, Harold K., to Jersey Nuclear-Avco Isotopes, Inc. Ion protected linear electron beam metal evaporator. 4,058,667, Cl. 13-31.000.
Forster, Friedrich M. O. Method and apparatus for examining human periodontal tissues. 4,058,115, Cl. 128-2.00S.
Forster, Friedrich M. O. Method and apparatus for compensation of interference magnetic fields. 4,058,782, Cl. 335-219.000.
Fort, J. Robert: *See—*
Silverman, Daniel; and Fort, J. Robert, 4,058,790, Cl. 340-15.5TS.
Fraley, Phillip Edward, to Bell Telephone Laboratories, Incorporated. Transistor oscillator circuit using thermal feedback for oscillation. 4,058,779, Cl. 331-108.00R.
Frangos, John W. Utensil basket for institutional dishwashing machines. 4,058,233, Cl. 220-19.000.
Frank, Howard A.; and Zoll, Paul M. Electrode. 4,058,128, Cl. 128-418.000.
Frank, Robert G., to PPG Industries, Inc. Orienting and aligning moving glass sheets. 4,058,200, Cl. 198-382.000.
Fravel, John C.; Chang, Louis H.; and Yoshikawa, Harunori, to Xerox Corporation. Increment-decrement logic for serial printer. 4,058,195, Cl. 197-18.000.
Frechtman, Jean. Convertible picture frame stand. 4,058,283, Cl. 248-441.00D.
Freedman Seating Company: *See—*
Wahls, Robert John, 4,058,282, Cl. 248-418.000.
Friedlander, Erich Siegfried, to Associated Electrical Industries Limited. Saturated reactors. 4,058,761, Cl. 323-48.000.
Friedrich Uhde GmbH: *See—*
Baing, Helmut; Oberschachtsiek, Gerd; Grenzing, Horst; and Meurer, Peter, 4,058,069, Cl. 110-8.00F.
Friedrichs, Jerome Peter: *See—*
Dano, Arnold Vincent; Tomaszewski, Jerry James; and Friedrichs, Jerome Peter, 4,058,744, Cl. 310-343.000.
Frielinghaus, Klaus H., to General Signal Corporation. Flat wheel detector. 4,058,279, Cl. 246-169.00R.
Frind, Gerhard; Fisk, Robert W.; and McLaughlin, Michael H., to General Electric Company. Current limiting fuse. 4,058,785, Cl. 337-204.000.
Frohlich, Alfons; Dahlmann, Julius; and Volter, Gunter, to Opti Patent-, Forschungs- und Fabrikations AG. Slide fastener. 4,058,145, Cl. 139-384.00B.
Fromfield, James P., to Automatic Switch Company. Pilot-operated valve having constant closing rate. 4,058,287, Cl. 251-46.000.
Fromm, Carl H.: *See—*
Lee, Henry L., Jr.; Orlowski, Jan A.; and Fromm, Carl H., 4,058,442, Cl. 204-159.120.
Frommlet, Hubert; Mautz, Karl-Heinz; and Brunsch, Klaus, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Roller bearing assembly with failsafe mechanism. 4,058,353, Cl. 308-1.00A.
Frymaster Corporation, The: *See—*
Price, George M., 4,058,703, Cl. 219-492.000.
Fuchs, Peter: *See—*
Hoffmann, Rolf-Rudiger; and Fuchs, Peter, 4,058,623, Cl. 424-317.000.
Fueki, Shimetomo: *See—*
Tamura, Toshio; Oouchi, Shigeo; Oosawa, Kenji; and Fueki, Shimetomo, 4,058,439, Cl. 204-49.000.
Fuji Electric Co., Ltd.: *See—*
Imaizumi, Yoshihiro; and Nishida, Yoshihiko, 4,058,681, Cl. 179-15.0AL.
Fuji Photo Film Co., Ltd.: *See—*
Murata, Masataka; Takeda, Keiji; and Ikeda, Teppei, 4,058,443, Cl. 204-159.170.
Osada, Chiaki; Hasegawa, Eiichi; and Murata, Masataka, 4,058,398, Cl. 96-27.00R.
Fuji Photo Optical Co., Ltd.: *See—*
Ando, Kunio; Saito, Takemi; and Higuchi, Takeshi, 4,058,827, Cl. 358-55.000.
Fuji Xerox Co. Ltd.: *See—*
Kikuchi, Yoshiki, 4,058,800, Cl. 365-3.000.
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, to Sumitomo Chemical Company, Limited. Substituted phenyl acetate, insecticidal composition and method of use. 4,058,622, Cl. 424-308.000.
Fujiwara, Shinobu; and Tanaka, Hitoshi, to TDK Electronics Co., Ltd. Sintered ceramic dielectric body. 4,058,404, Cl. 106-73.310.
Fuller, Robert R.; and Morris, Donald Blanton, to Gulf States Paper Corporation. Conversion of sulfur in blank liquor to eliminate odorous emissions and facilitate the collection of sulfate soaps. 4,058,433, Cl. 162-16.000.
Funabiki, Kyohei; and Tokunaga, Tetsuya, to Hooker Chemicals & Plastics Corporation. Refractory compositions. 4,058,403, Cl. 106-56.000.
Fung, Anthony Kei Lun: *See—*
Jones, Peter Hadley; Bariana, Dilbagh Singh; Fung, Anthony Kei Lun; Martin, Yvonne Connolly; Kyncl, Jaroslav; and Lall, Amrit, 4,058,559, Cl. 260-520.00C.
Furuichi, Sei: *See—*
Kiyonaga, Kingo; Ago, Ryousei; and Furuichi, Sei, 4,058,650, Cl. 428-683.000.
Furuno, Kouji: *See—*
Mori, Takashi; Takaku, Sakae; Oi, Nobuhiro; Shindo, Minoru; Hirano, Takeaki; Kataoka, Shigeyuki; and Furuno, Kouji, 4,058,523, Cl. 544-165.000.
Futai, Norio; Murakami, Toshio; Takahara, Yoshimasa; and Kumazawa, Toshiharu, to Mitsubishi Precision Co., Ltd.; and Director-General of the Agency of Industrial Science and Technology. Method of eliminating foam appearing on a liquid surface. 4,058,481, Cl. 252-321.000.
G.A.O. Gesellschaft fur Automation und Organisation mbH: *See—*
Gauch, Wolfgang; Kaule, Wittich; and Pauli, Guenter, 4,057,919, Cl. 40-2.200.
G. D. Searle & Co.: *See—*
Waxman, Albert S., 4,058,001, Cl. 73-620.000.
GAF Corporation: *See—*
Fein, Marvin M.; Williams, Earl P.; and Field, Nathan D., 4,058,462, Cl. 210-289.000.
Gaia, Aldino J., to McGraw-Edison Company. Indicator-equipped, dual-element fuse. 4,058,784, Cl. 337-164.000.
Gaia, Aldino J.; and Urani, Angelo, to McGraw-Edison Company. Protector for electric circuits. 4,058,786, Cl. 337-293.000.
Gallagher, William J.: *See—*
Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; and Gallagher, William J., 4,058,486, Cl. 250-493.000.
Galloway, Charles Rex: *See—*
Knapp, Merton C.; and Galloway, Charles Rex, 4,058,412, Cl. 134-24.000.
Gappa, Gunther: *See—*
Juntgen, Harald; Klein, Jurgen; and Gappa, Gunther, 4,058,374, Cl. 55-60.000.
Garberi, Sergio: *See—*
Giolitti, Nicolo; and Garberi, Sergio, 4,058,707, Cl. 235-448.000.
Gardner, David L.: *See—*
Case, Patrick P.; and Gardner, David L., 4,058,428, Cl. 156-429.000.
Gardner, Richard H.; and Kelley, Robert D., to B. F. Goodrich Company, The. Brake disc mounting. 4,058,190, Cl. 188-218.0XL.
Gargini, Eric John, to Communications Patents Limited. Solid state subscriber selection switches for wired broadcasting systems. 4,058,770, Cl. 325-308.000.
Gauch, Georg, to Metallgesellschaft Aktiengesellschaft. Apparatus for measuring the flow of fine-grained hot solids. 4,058,012, Cl. 73-228.000.
Gauch, Wolfgang; Kaule, Wittich; and Pauli, Guenter, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Laminated data carrier protected against forgery, particularly identification card. 4,057,919, Cl. 40-2.200.
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, to W. R. Grace & Co. Preparation of N,N'-Dicarboxymethyl-1,3-propanediamines. 4,058,527, Cl. 260-251.00R.
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, to W. R. Grace & Co. 5-Hydroxyhexahydropyrimidine. 4,058,528, Cl. 260-251.00R.

Gauss, Robert C.; and Wills, Lynn D., to Motorola, Inc. Encapsulated base for whip antenna. 4,058,811, Cl. 343-715.000.
Gavrun, Michael T.; and Loyd, Robert W., Jr., to Curtiss-Wright Corporation. Oil seal construction for rotary mechanisms. 4,058,321, Cl. 277-81.00P.
Gaw, Thomas I. Oil salvage ship with ocean going bow. 4,058,461, Cl. 210-242.00S.
GB Fermentation Industries, Inc.: *See*—
Roan, Charles F., 4,058,631, Cl. 426-52.000.
Gebruder Schmidt Metallwarenfabrik: *See*—
Schmidt, Karl Wilhelm, 4,058,209, Cl. 206-350.000.
Geilhausen, Horst: *See*—
Bauer, Kurt; Wittman, Gunther; Mussgay, Manfred; Irion, Eckart; and Geilhausen, Horst, 4,058,599, Cl. 424-92.000.
General Bathroom Products Corporation: *See*—
Palka, James J., 4,058,718, Cl. 362-235.000.
General Electric Company: *See*—
Bellamy, Winthrop D.; and Holub, Fred F., 4,058,411, Cl. 127-37.000.
Bicicchi, Richard Thomas; and Melilli, Albert Samuel, 4,058,417, Cl. 148-37.000.
Brown, Richard N., 4,058,338, Cl. 294-31.200.
Chambless, Leo B., 4,057,977, Cl. 62-324.000.
Corman, James C.; and Walmet, Gunnar E., 4,058,160, Cl. 165-105.000.
Crivello, James V., 4,058,400, Cl. 96-86.00P.
Crivello, James V., 4,058,401, Cl. 96-115.00R.
Engeler, William E., 4,058,717, Cl. 364-824.000.
Frind, Gerhard; Fisk, Robert W.; and McLaughlin, Michael H., 4,058,785, Cl. 337-204.000.
Ghezzo, Mario, 4,057,895, Cl. 29-591.000.
Goldberg, Howard S., 4,058,716, Cl. 364-824.000.
Insley, Gene L.; and Lewis, Merle J., 4,057,959, Cl. 58-125.00C.
Kinson, Philip L.; and Orlando, Charles M., 4,058,570, Cl. 260-620.000.
Milkovic, Miran, 4,058,768, Cl. 324-142.000.
Sawada, Fred H.; Klementowski, Frank M.; and Bishop, James S., 4,058,804, Cl. 340-248.00A.
Walter, John L., 4,058,415, Cl. 148-32.000.
Will, Fritz G., 4,058,651, Cl. 429-105.000.
General Mills Chemicals, Inc.: *See*—
MacKay, Kenneth D.; and Rogier, Edgar R., 4,058,585, Cl. 423-24.000.
General Signal Corporation: *See*—
Carlson, William L., Jr., 4,058,288, Cl. 251-229.000.
DiToro, Michael J., 4,058,713, Cl. 364-724.000.
Frielinghaus, Klaus H., 4,058,279, Cl. 246-169.00R.
Geophysical Systems Corporation: *See*—
Martin, Lincoln A.; and Fenley, William Franklin, Jr., 4,058,791, Cl. 340-15.5MC.
Silverman, Daniel; and Fort, J. Robert, 4,058,790, Cl. 340-15.5TS.
George Hantscho Company, Inc.: *See*—
Hantscho, Walter G., 4,058,058, Cl. 101-365.000.
George, Peter K.; and Oeffinger, Thomas R., to Rockwell International Corporation. Block oriented random access bubble memory. 4,058,799, Cl. 340-174.0TF.
Geothermal Investment Co.: *See*—
Hutchinson, Arthur J. L., 4,057,964, Cl. 60-641.000.
Gephart, Norman S.: *See*—
Demas, Nickolas P.; Duncan, William E.; Gephart, Norman S.; and Waltz, William T. S., 4,058,749, Cl. 313-326.000.
Getz, Edward J.: *See*—
Barbieri, Thomas; and Getz, Edward J., 4,058,211, Cl. 206-422.000.
Ghezzo, Mario, to General Electric Company. Method of forming sloped members of N-type polycrystalline silicon. 4,057,895, Cl. 29-591.000.
Ghirga, Marcello: *See*—
Piccolo, Luigi; Ghirga, Marcello; Paolinelli, Antonio; and Paganessi, Gian Pietro, 4,058,389, Cl. 71-31.000.
Giger, Urs; and Perrot, Friedrich, to Eta A.G. Ebauches-Fabrik. Method of producing an oscillating weight for automatic timepieces. 4,057,885, Cl. 29-177.000.
Gilford Instrument Laboratories Inc.: *See*—
Gilford, Saul R., 4,058,367, Cl. 23-253.00R.
Gilford, Saul R., to Gilford Instrument Laboratories Inc. Automatic asynchronous fluid processing apparatus. 4,058,367, Cl. 23-253.00R.
Gillette Company, The: *See*—
Trotta, Robert A., 4,057,896, Cl. 30-89.000.
Gilson, John L.: *See*—
Moschovis, Elia P.; and Gilson, John L., 4,058,470, Cl. 252-62.10L.
Giolitti, Nicolo; and Garberi, Sergio, to Ing. C. Olivetti & C., S.p.A. System for introducing the instructions of a program into a programmable office machine. 4,058,707, Cl. 235-448.000.
Gitlitz, Melvin H., to M&T Chemicals Inc. Method for preparing tri(β-substituted phenethyl)tin halides. 4,058,545, Cl. 260-429.700.
Giurlando, Angelo C.; and Richardson, David, to Fedders Corporation. Refrigerant compressor having indirect outlet connection. 4,058,361, Cl. 417-312.000.
GKN Transmissions Limited: *See*—
Webb, Oswald, 4,058,027, Cl. 74-711.000.
Glander, Fritz; and Voigt, Hermann Uwe, to Kabel-und Metallwerke Gutehoffnungsnutte AG. Grafting of silane on thermoplastics or elastomers for purposes of cross-linking. 4,058,583, Cl. 264-176.00R.
Glatti, Flaviano; and Slongo, Gastone, to Montedison S.p.A. Plasticized polymeric compositions based on vinyl chloride polymers. 4,058,471, Cl. 252-63.500.
Goetz, Norbert; and Fischer, Roman, to BASF Aktiengesellschaft. Production of high molecular weight α,β-unsaturated aldehydes. 4,058,536, Cl. 260-340.700.
Goff, Robert F.: *See*—
McKinney, James T.; and Goff, Robert F., 4,058,724, Cl. 250-309.000.
Goldberg, Howard S., to General Electric Company. Surface charge signal processing apparatus. 4,058,716, Cl. 364-824.000.
Golden, Ronald: *See*—
Vincent, David N.; and Golden, Ronald, 4,058,434, Cl. 162-165.000.
Goodman, Willard B.: *See*—
Guild, Charles L.; and Goodman, Willard B., 4,057,970, Cl. 61-53.720.
Goodrich, Harold E.; and Fabel, Dolores M. Vehicle leveling system. 4,058,292, Cl. 254-88.000.
Goodyear Tire & Rubber Company, The: *See*—
Leshin, Richard, 4,058,524, Cl. 544-136.000.
Gordon, Hayden S., to Electric Power Research Institute, Inc. Multiple ring inertial energy storage wheel with improved inter-ring connector. 4,058,024, Cl. 74-572.000.
Gosselin, Dennis W.: *See*—
Vrabel, Joseph D.; and Gosselin, Dennis W., 4,057,904, Cl. 33-125.00R.
Gosset, Emile: *See*—
Boucheron, Bernard; and Gosset, Emile, 4,058,653, Cl. 526-159.000.
Gosslinghoff, Reinhard: *See*—
Reist, Walter; Hansch, Egon; and Gosslinghoff, Reinhard, 4,058,202, Cl. 198-482.000.
Goto, Katsuaki: *See*—
Kuwabara, Katsutoshi; and Goto, Katsuaki, 4,058,777, Cl. 331-57.000.
Gottlieb, Robert G., to Lewis Industries, Inc. Nut driving assembly apparatus. 4,057,888, Cl. 29-240.000.
Gould, Inc.: *See*—
Brown, Arling Dix, Jr.; and Reilly, Edward Justus, 4,058,814, Cl. 346-154.000.
Gozzo, Franco: *See*—
Abbruzzese, Luigi; Gozzo, Franco; Rossi, Giorgio; Masoero, Marcella; Lorusso, Simone; Bonola, Paola; and Tamburin, Gino, 4,058,613, Cl. 424-258.000.
Gracey, Charles M.: *See*—
White, Leslie E.; and Gracey, Charles M., 4,058,479, Cl. 252-301.10W.
Graf, Wilfried; and Schmid, Erich, to Ciba-Geigy Corporation. Polycyclic amino derivatives of pyrrolidone and piperidone. 4,058,529, Cl. 260-251.00A.
Gramm, Ronald J., to Sunwall Incorporated. Solar heating and insulating apparatus. 4,058,109, Cl. 126-270.000.
Granek, Gerhard; and Greenan, Clifford Paul Robert, to Greenan, Clifford Paul Robert. Fire protection apparatus. 4,058,167, Cl. 169-61.000.
GRANGES NYBY AB: *See*—
Willimzik, Bernhard Max, 4,057,992, Cl. 72-283.000.
Graymills Inc.: *See*—
Wetherby, Edward M., 4,058,296, Cl. 366-160.000.
Greci, John J.: *See*—
Bascom, Hollis H.; Greci, John J.; and Hoopengardner, Merle R., 4,058,423, Cl. 156-98.000.
Green Hills, Inc.: *See*—
Knapp, Merton C.; and Galloway, Charles Rex, 4,058,412, Cl. 134-24.000.
Greenan, Clifford Paul Robert: *See*—
Granek, Gerhard; and Greenan, Clifford Paul Robert, 4,058,167, Cl. 169-61.000.
Greenhut, Joseph. Calibrated electrical motor switch. 4,058,695, Cl. 200-153.00V.
Grefco, Inc.: *See*—
Mirliss, Melvin J.; and Nielsen, Richard B., 4,057,908, Cl. 34-10.000.
Greffe, Maurice F., to Societe des Brevets Greffe. Bagging methods. 4,057,949, Cl. 53-22.00B.
Grenzing, Horst: *See*—
Baing, Helmut; Oberschachtsiek, Gerd; Grenzing, Horst; and Meurer, Peter, 4,058,069, Cl. 110-8.00F.
Grib, Maria Mefodievna: *See*—
Ovchinnikov, Viktor Georgievich; Noritsa, Nadezhda Petrovna; Grib, Maria Mefodievna; Kamennov, Nikolai Alexandrovich; and Skvortsova, Elena Konstantinovna, 4,058,618, Cl. 424-273.00R.
Grier, Nathaniel: *See*—
Jacobus, David P.; Dulaney, Eugene L.; and Grier, Nathaniel, 4,058,624, Cl. 424-330.000.
Jacobus, David P.; Dulaney, Eugene L.; and Grier, Nathaniel, 4,058,625, Cl. 424-325.000.
Griffin, John W. Liquid filter apparatus. 4,058,459, Cl. 210-132.000.
Griffin, Robert H.: *See*—
Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., 4,058,672, Cl. 178-3.000.
Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., 4,058,838, Cl. 358-257.000.
Grolig, Johann: *See*—
Rasp, Christian; Scharfe, Gerhard; and Grolig, Johann, 4,058,556, Cl. 560-231.000.
Grout Supply Company: *See*—
Snyder, Joseph T.; and Huffman, Richard E., 4,058,405, Cl. 106-87.000.

Grover, Shamsher S.: *See*—
Chang, Clarence D.; and Grover, Shamsher S., 4,058,576, Cl. 260-673.000.
Gruber, Carl F.; and Siebel, Georg, to Schoeller & Co. Elektrotechnische Fabrik GmbH & Co. Glow element arrangement for electric cigarette lighters. 4,058,701, Cl. 219-270.000.
GTE Sylvania Incorporated: *See*—
Brennan, Raymond J., 4,058,236, Cl. 221-163.000.
Fahlen, Theodore S.; and Kirk, Russell F., 4,058,778, Cl. 331-94.50G.
Schreurs, Willy P., 4,058,639, Cl. 427-67.000.
Woods, William C.; Levin, Robert E.; and Hodges, Richard H., 4,058,752, Cl. 315-360.000.
Gubarev, Georgy Vasilievich: *See*—
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.
Gubinsky, Anatoly Sergeevich: *See*—
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.
Guild, Charles L.; and Goodman, Willard B. Rotary fluid supply joints for expansible mandrels. 4,057,970, Cl. 61-53.720.
Guinet, Yves Maurice; and Noirel, Yves Maurice. One way data transmission system. 4,058,830, Cl. 358-86.000.
Guise, Arthur A., Jr. Marble shooting game. 4,058,315, Cl. 273-118.00R.
Guito, Ralph M., Jr.: *See*—
Piper, Donald R., Sr., 4,058,075, Cl. 114-222.000.
Gulf States Paper Corporation: *See*—
Fuller, Robert R.; and Morris, Donald Blanton, 4,058,433, Cl. 162-16.000.
Gunderson, Cary A.: *See*—
Rosen, Paul W.; and Gunderson, Cary A., 4,058,258, Cl. 239-165.000.
Gunter & Cooke, Inc.: *See*—
Gunter, Josef K., 4,057,877, Cl. 19-107.000.
Gunter, Josef K., to Gunter & Cooke, Inc. Waste cleaning improvement for carding machines. 4,057,877, Cl. 19-107.000.
Gutbrod, Dieter: *See*—
Lahm, Heinrich; and Gutbrod, Dieter, 4,058,033, Cl. 82-2.00R.
Lahm, Heinrich; and Gutbrod, Dieter, 4,058,034, Cl. 82-2.00R.
Gutermann, Winfried: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Hartmann, Hans-Joerg; Spoor, Herbert; Uhl, Karl; Lehner, August; Gutermann, Winfried; and Motz, Herbert, 4,058,646, Cl. 428-425.000.
Gutierrez, Eddie N.; and Lamberti, Vincent, to Lever Brothers Company. Novel ester derivatives of ether polycarboxylic acids and process for making same. 4,058,554, Cl. 560-180.000.
Gyi, Ko Ko, to Burroughs Corporation. Head and gimbal assembly. 4,058,843, Cl. 360-103.000.
Haarmann, Walter: *See*—
Kummer, Werner; Stahle, Helmut; Koppe, Herbert; Haarmann, Walter; and Reichl, Richard, 4,058,616, Cl. 424-267.000.
Haas, Rainer, to Hans Hollmuller, Maschinenbau, Firma. Method of etching copper and copper alloys. 4,058,431, Cl. 156-627.000.
Habu, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Distributor for an internal combustion engine. 4,058,095, Cl. 123-117.00R.
Haigh, Robert, to Lowell Corporation. Uni-directional mechanism. 4,058,192, Cl. 192-46.000.
Hajos, Gyorgy: *See*—
Kekesy, Tibor; Szeberenyi, Szabolcs; Beer, Gyorgy; Dudas, Antal; Hajos, Gyorgy; Szporny, Laszlo; and Czajlik, Eva, nee Csizer, 4,058,522, Cl. 260-239.570.
Hake, Kenneth A.: *See*—
Blair, Calvin B.; and Hake, Kenneth A., 4,058,172, Cl. 172-311.000.
Halcon International, Inc.: *See*—
Rizkalla, Nabil; and Naglieri, Anthony N., 4,058,542, Cl. 260-429.00R.
Halfhill, Martin O., to Xerox Corporation. Power supply for computer peripheral device. 4,058,759, Cl. 322-13.000.
Hall, Edward L. Passenger vehicle access stair and elevator apparatus. 4,058,228, Cl. 214-77.00R.
Hallgreen, Knud Julius, to Danfoss A/S. Temperature-monitoring and control system. 4,058,254, Cl. 236-68.00B.
Halliburton Company: *See*—
Holden, John C.; and Wray, Gary Q., 4,058,165, Cl. 166-314.000.
Hammann, Ingeborg: *See*—
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Hammann, Ingeborg; and Stendel, Wilhelm, 4,058,603, Cl. 424-200.000.
Hammitt, Frederick G.; Ahmed, Osman Saleh Mohamed; Bhatt, Niranjan Rasik; and Hwang, Jia-Bo Gilbert. Apparatus for measuring erosion produced by cavitation. 4,058,004, Cl. 73-86.000.
Hannoschock, Kurt: *See*—
Ries, Karl; Hannoschock, Kurt; and Simoneit, Gunter, 4,058,000, Cl. 73-644.000.
Hans Hollmuller, Maschinenbau, Firma: *See*—
Haas, Rainer, 4,058,431, Cl. 156-627.000.
Hansch, Egon: *See*—
Reist, Walter; Hansch, Egon; and Gosslinghoff, Reinhard, 4,058,202, Cl. 198-482.000.
Hansel, William B., to Sun Oil Company of Pennsylvania. Attitude valve for a gasoline dispensing nozzle with a vapor receiving system. 4,058,149, Cl. 141-301.000.
Hantscho, Walter G., to George Hantscho Company, Inc. Ink fountain for printing presses. 4,058,058, Cl. 101-365.000.
Hanyu, Susumu; and Amano, Takashi, to Janome Sewing Machine Co. Ltd. Case for portable sewing machines. 4,058,073, Cl. 112-258.000.
Hanz, Marvin C.: *See*—
Elkins, Johnny C.; and Hanz, Marvin C., 4,058,221, Cl. 211-87.000.
Harada, Masaaki, to Rank Xerox Ltd. Paper feeding device. 4,058,305, Cl. 271-16.000.
Harris Corporation: *See*—
Foley, Richard Gregory, 4,058,304, Cl. 270-79.000.
Hart, James E., to Westinghouse Air Brake Company. Brake apparatus with a combined brake cylinder and reservoir. 4,058,348, Cl. 303-35.000.
Hart, Mark M. Cooking grill and briquettes therefor. 4,058,052, Cl. 99-646.00R.
Hartmann, Hans-Joerg: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Hartmann, Hans-Joerg; Spoor, Herbert; Uhl, Karl; Lehner, August; Gutermann, Winfried; and Motz, Herbert, 4,058,646, Cl. 428-425.000.
Hartmann, Heinrich: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Spoor, Herbert; and Lehner, August, 4,058,506, Cl. 260-75.0NP.
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Hartmann, Hans-Joerg; Spoor, Herbert; Uhl, Karl; Lehner, August; Gutermann, Winfried; and Motz, Herbert, 4,058,646, Cl. 428-425.000.
Haschke, Heinz; Schreyer, Gerd; Schwarze, Werner; and Suchsland, Helmut, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Process for the substitution of chlorine atoms of cyanuric chloride. 4,058,662, Cl. 544-208.000.
Hasegawa, Eiichi: *See*—
Osada, Chiaki; Hasegawa, Eiichi; and Murata, Masataka, 4,058,398, Cl. 96-27.00R.
Hasegawa, Mitsuhiro: *See*—
Nishimura, Yasutake; and Hasegawa, Mitsuhiro, 4,058,688, Cl. 179-156.00R.
Hashimoto, Kazuo, to Hashimoto Koporeishon Kabushiki Kaisah. Telephone answering device without outgoing message tape. 4,058,679, Cl. 179-6.00R.
Hashimoto Koporeishon Kabushiki Kaisah: *See*—
Hashimoto, Kazuo, 4,058,679, Cl. 179-6.00R.
Hasinger, Siegfried H.; and Miller, David K., to United States of America, Air Force. Supersonic flow diffuser with energy redistribution. 4,058,141, Cl. 138-39.000.
Haslam, Alan Alfred, to Petrocarbon Developments Limited. Treatment of ammonia synthesis purge gas. 4,058,589, Cl. 423-359.000.
Hata, Shun-ichi; Mizuno, Koji; Nishii, Yasuho; Mitsuishi, Etsuko; and Shiba, Motoharu, to Chugai Seiyaku Kabushiki Kaisha. Method for treating alcoholism. 4,058,601, Cl. 424-180.000.
Hattori, Hironori: *See*—
Awane, Katunobu; Hattori, Hironori; Biwa, Tetuo; and Tamaki, Hiroshi, 4,058,822, Cl. 357-23.000.
Hauer, Werner: *See*—
Hochradel, Ernest; Hauer, Werner; Meyer, Martin R.; and Reuter, Frederick A., 4,058,274, Cl. 243-5.000.
Havelkova, Dana: *See*—
Bazika, Vladimir; Prazak, Premysl; and Havelkova, Dana, 4,057,999, Cl. 73-53.000.
Hazelton, Ronald L.: *See*—
Smith, Stuart B.; McAlpin, James J.; Peruyero, Jose M. A.; Hazelton, Ronald L.; and Upchurch, Edward F., 4,058,652, Cl. 526-68.000.
Head, Brian Arthur, to Whatman Reeve Angel Limited. External supported filter. 4,058,456, Cl. 210-23.00R.
Hedlund, Per Olov; and Hertsius, Lars Olof, to Telefonaktiebolaget L M Ericsson. Cable magazine. 4,058,265, Cl. 242-47.010.
Heinrich, Ernst; and Ribka, Joachim, to Cassella Farbwerke Mainkur Aktiengesellschaft. Water-insoluble monoazo 3-cyano-4-methyl-6-hydroxy-2-pyridine dyestuffs. 4,058,518, Cl. 260-156.000.
Helfer, Paul E.: *See*—
Jones, Marvin R.; and Helfer, Paul E., 4,057,887, Cl. 29-240.000.
Helfet, Arthur Jacob. Elbow prosthesis. 4,057,858, Cl. 3-1.910.
Hellsten, Karl Martin Edvin, to Berol Kemi AB. Detergent composition having textile softening and antistatic effect. 4,058,489, Cl. 252-547.000.
Helmut E. W. Masch: *See*—
Morse, Hugh B.; and Johnson, Robert B., 4,058,206, Cl. 206-44.00R.
Henbest, Richard George Cleveland, to Imperial Chemical Industries Limited. Adsorbent material. 4,058,483, Cl. 252-446.000.
Hendrie, John Matthew: *See*—
Andrews, Allen Howe; McPherson, James Norman; Burns, John Thomas, Jr.; and Hendrie, John Matthew, 4,058,788, Cl. 338-42.000.
Hennart, Claude; and Dulat, Marcel Louis, to Airwick Industries, Inc. Insecticide evaporator comprising a stabilizer. 4,058,607, Cl. 424-219.000.
Henrick, Clive A.; and Labovitz, Jeffery N., to Zoecon Corporation. 3,5-Lower alkylene carboxylic esters. 4,058,666, Cl. 560-126.000.

Henzl, Jindrich; Cerny, Jindrich; and Malasek, Jaromir, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Constant tension regulator of positively unwound flexible material, particularly warp threads in weaving machines. 4,058,143, Cl. 139-110.000.

Herbrand, Willy, deceased: *See—*
Jaeger, Karl-Heinz; and Herbrand, Willy, deceased, 4,058,534, Cl. 260-295.50S.

Hercules Incorporated: *See—*
Black, Donald Kirkbright, 4,058,663, Cl. 560-3.000.

Hermann, Otto, to LeBlond Incorporated. English-metric dial assembly. 4,058,080, Cl. 116-115.500.

Herrle, Karl: *See—*
Denzinger, Walter; Seelert, Kurt; and Herrle, Karl, 4,058,655, Cl. 526-212.000.

Hertfelder, Wilhelm: *See—*
Linder, Ernst; Hertfelder, Wilhelm; Schnaibel, Eberhard; and Junginger, Erich, 4,058,255, Cl. 237-12.30B.

Hertsius, Lars Olof: *See—*
Hedlund, Per Olov; and Hertsius, Lars Olof, 4,058,265, Cl. 242-47.010.

Hesler, Kenneth K.: *See—*
Sekmakas, Kazys; and Hesler, Kenneth K., 4,058,499, Cl. 260-29.6RW.

Hester, Gerald Paul: *See—*
Sherer, Paul; and Hester, Gerald Paul, 4,058,708, Cl. 235-92.0CC.

Heydorn, Walter Emil Erich, to Ingenjorsfirman R. Ohrnell AB. Cleaning device for cavities preferably in chill moulds for steel ingots. 4,057,871, Cl. 15-56.000.

Hicks, Glenn W. Faucet valve. 4,058,289, Cl. 251-304.000.

Higgins, Larry; King, John Thomas; Butler, Blondie; and Struewing, Francis R., deceased (by Struewing, Barbara C., administratrix), to Leggett & Platt, Incorporated. Box spring assembly. 4,057,860, Cl. 5-247.000.

Higuchi, Takeshi: *See—*
Ando, Kunio; Saito, Takemi; and Higuchi, Takeshi, 4,058,827, Cl. 358-55.000.

Hikosaka, Noboru; Watanabe, Mitsuo; and Shiozaki, Shoji, to Isuzu Motors Limited. V-Type engines. 4,058,092, Cl. 123-32.0ST.

Hill, Carl J. Feed apparatus for poultry gizzard processing machine. 4,057,875, Cl. 17-43.000.

Hill, Michael E.: *See—*
Welton, Barry S.; Westerman, Granval W.; and Hill, Michael E., 4,058,757, Cl. 318-474.000.

Hill, William L., to Suntech, Inc. Reinforced ice matrix. 4,057,967, Cl. 61-1.00R.

Hill, William W., to Peter, Strong & Company, Inc. Iron complexes and foodstuffs containing them. 4,058,621, Cl. 424-295.000.

Hirano, Masachika: *See—*
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,058,622, Cl. 424-308.000.

Hirano, Takeaki: *See—*
Mori, Takashi; Takaku, Sakae; Oi, Nobuhiro; Shindo, Minoru; Hirano, Takeaki; Kataoka, Shigeyuki; and Furuno, Kouji, 4,058,523, Cl. 544-165.000.

Hirschberger, Carl R. Self-feathering propeller. 4,058,360, Cl. 416-140.000.

Hitachi, Ltd.: *See—*
Honbu, Mitsuyuki; Obara, Sanshiro; and Hori, Takamasa, 4,058,755, Cl. 318-47.000.
Ichikawa, Norio; and Ueno, Sadayasu, 4,058,787, Cl. 338-22.00R.
Kohno, Takashige; Takamaru, Takeshi; Kuwahara, Akiyasu; and Mori, Michitsugu, 4,058,093, Cl. 123-75.00B.
Miyoshi, Tadahiko; Kurihara, Yasutoshi; Kamei, Tatsuya; and Ogawa, Takuzo, 4,058,821, Cl. 357-19.000.
Okubo, Isao; Ito, Takayoshi; and Mitsui, Norihiko, 4,057,934, Cl. 49-28.000.
Sakudo, Noriyuki; Tokiguchi, Katsumi; and Kanomata, Ichiro, 4,058,748, Cl. 313-156.000.
Tokunaga, Michio; Ohhinata, Ichiro; and Okuhara, Shinzi, 4,058,741, Cl. 307-252.00G.

Hitachi Metals, Ltd.: *See—*
Kiyonaga, Kingo; Ago, Ryousei; and Furuichi, Sei, 4,058,650, Cl. 428-683.000.
Tashiro, Sadaji; and Kuroi, Yasuyuki, 4,058,037, Cl. 83-70.000.

Hnojewyj, Olexander, to Minnesota Mining and Manufacturing Company. Improved pavement marking method. 4,058,641, Cl. 427-137.000.

Hobson, James Charles; and Wroble, Arthur John, to Cadillac Gage Company. Water cannon. 4,058,256, Cl. 239-101.000.

Hochiki Corporation: *See—*
Kuwabara, Katsutoshi; and Goto, Katsuaki, 4,058,777, Cl. 331-57.000.

Hochradel, Ernest; Hauer, Werner; Meyer, Martin R.; and Reuter, Frederick A. Pneumatic tube system. 4,058,274, Cl. 243-5.000.

Hodges, Richard H.: *See—*
Woods, William C.; Levin, Robert E.; and Hodges, Richard H., 4,058,752, Cl. 315-360.000.

Hoechst Aktiengesellschaft: *See—*
Kuhls, Jurgen; Martini, Thomas; and Steininger, Alfred, 4,058,578, Cl. 260-884.000.

Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. 4-Amino-5-thione-1,2,4-triazines. 4,058,525, Cl. 544-182.000.

Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Insecticidal and acaricidal O-ethyl-O-[1,6-dihydro-1-substituted-6-oxo-pyridazin(3)yl]-thionobenzenephosphonic acid esters. 4,058,603, Cl. 424-200.000.

Hoffman, Gordon Herman: *See—*
Chi, Chang Whan; Hoffman, Gordon Herman; and Eichhorn, Emil, 4,058,586, Cl. 423-118.000.

Hoffmann-La Roche Inc.: *See—*
Boller, Arthur; and Scherrer, Hanspeter, 4,058,476, Cl. 252-299.000.
Boller, Arthur; and Scherrer, Hanspeter, 4,058,477, Cl. 252-299.000.
Boller, Arthur; and Scherrer, Hanspeter, 4,058,478, Cl. 252-299.000.
Roth, Willy, 4,058,626, Cl. 424-333.000.
Westley, John, 4,058,620, Cl. 424-283.000.

Hoffmann, Rolf-Rudiger; and Fuchs, Peter, to Schering Aktiengesellschaft. Prostaglandin-containing lyophilized powders. 4,058,623, Cl. 424-317.000.

Hoke, Donald Irvin, to Lubrizol Corporation, The. Lubricants and functional fluids containing polyfunctional nitriles. 4,058,469, Cl. 252-51.50R.

Holda, Eugene M.; and Lark, John C., to Standard Oil Company (Indiana). Polyester-aminoplast bulking agents. 4,058,496, Cl. 260-21.000.

Holden, John C.; and Wray, Gary Q., to Halliburton Company. Wellbore circulating valve. 4,058,165, Cl. 166-314.000.

Holland, Henry A. Nelson, to Raymond International Inc. Method for operating pile driver. 4,058,175, Cl. 173-1.000.

Hollen, Merritt Leroy. Coins organized identification numbering system apparatus and method. 4,058,820, Cl. 354-80.000.

Holt, Amos Earl; Lawrie, William Eugene; and Birks, Albert Stingel, to Babcock & Wilcox Company, The. Method and apparatus for magnetic inspection through adjustable pulsed alternating and direct current magnetic fields. 4,058,762, Cl. 324-216.000.

Holt, F. Sheppard. Wide angle solar heat collection system. 4,058,110, Cl. 126-271.000.

Holub, Fred F.: *See—*
Bellamy, Winthrop D.; and Holub, Fred F., 4,058,411, Cl. 127-37.000.

Homer, Paul B.: *See—*
Banks, Clarence K.; Crout, Prescott D.; and Homer, Paul B., 4,058,275, Cl. 244-3.150.

Honbu, Mitsuyuki; Obara, Sanshiro; and Hori, Takamasa, to Hitachi, Ltd. Kramer system utilizing a commutatorless motor. 4,058,755, Cl. 318-47.000.

Hooker Chemicals & Plastics Corporation: *See—*
Funabiki, Kyohei; and Tokunaga, Tetsuya, 4,058,403, Cl. 106-56.000.
Scharf, Daniel J., 4,058,466, Cl. 252-8.100.

Hoopengardner, Merle R.: *See—*
Bascom, Hollis H.; Greci, John J.; and Hoopengardner, Merle R., 4,058,423, Cl. 156-98.000.

Hooper, Edward: *See—*
Dunn, Earl F.; Erskine, Henry; and Hooper, Edward, 4,058,071, Cl. 112-235.000.

Hooper, Walter L.: *See—*
Piper, Donald R., Sr., 4,058,075, Cl. 114-222.000.

Hopkins, Richard H.: *See—*
Duncan, Charles; and Hopkins, Richard H., 4,058,429, Cl. 156-601.000.

Hori, Takamasa: *See—*
Honbu, Mitsuyuki; Obara, Sanshiro; and Hori, Takamasa, 4,058,755, Cl. 318-47.000.

Horii, Sadashige: *See—*
Kimura, Rokusaburo; and Horii, Sadashige, 4,057,957, Cl. 58-21.155.

Hovhannessian, Karnig. Adjustable sun hat. 4,057,855, Cl. 2-177.000.

Howard, Larry Edward: *See—*
Faulkner, Duane Harold; Smith, Harvell Morton; and Howard, Larry Edward, 4,058,386, Cl. 65-6.000.

Howorth Air Engineering Limited: *See—*
Howorth, Frederick Hugh, 4,057,861, Cl. 5-365.000.

Howorth, Frederick Hugh, to Howorth Air Engineering Limited. Mattress. 4,057,861, Cl. 5-365.000.

Huber, Manfred, to Bayerische Motoren Werke Aktiengesellschaft. Electrically driven vehicle, especially passenger motor vehicle. 4,058,182, Cl. 180-68.500.

Huber, Rolf: *See—*
Kiehs, Karl; Adolphi, Heinrich; Huber, Rolf; and Baumann, Annegrit, 4,058,606, Cl. 424-217.000.

Hudson Lock, Inc.: *See—*
Patriquin, George P., 4,057,987, Cl. 70-364.00R.

Huey, Kent: *See—*
Zirino, Alberto; Clavell, Cesar; and Huey, Kent, 4,058,446, Cl. 204-195.00R.

Huffman, Richard E.: *See—*
Snyder, Joseph T.; and Huffman, Richard E., 4,058,405, Cl. 106-87.000.

Hugh J. Baker & Company: *See—*
Stuart, Alistair J.; and Burch, James B., 4,058,184, Cl. 182-128.000.

Hughes Aircraft Company: *See—*
Basiulis, Algerd, 4,057,963, Cl. 60-641.000.
Iriarte, Wilfrido R., 4,058,159, Cl. 165-105.000.
Otto, Oberdan W., 4,058,745, Cl. 310-366.000.

Hughes, John Leonard. Optical transponder. 4,058,774, Cl. 330-4.300.

Hungerford, Daniel Comstock, to Brunswick Corporation. Anchor chock. 4,058,074, Cl. 114-210.000.

Hunley, Walter T. Bowling pin wire guide sleeve. 4,058,309, Cl. 273-43.00D.
Huntington Alloys, Inc.: *See*—
Eiselstein, Herbert Louis; Clatworthy, Edward Frederick; and Smith, Darrell Franklin, Jr., 4,058,416, Cl. 148-32.000.
Huret, Jacques: *See*—
Huret, Roger; and Huret, Jacques, 4,058,020, Cl. 74-217.00B.
Huret, Roger; and Huret, Jacques. Device for guiding the chain of derailleur bicycle gear changers. 4,058,020, Cl. 74-217.00B.
Hurst, William M., to United States of America, Navy. Shaped charge rod warhead. 4,058,063, Cl. 102-56.0SC.
Hurt, Francis Neil; Theaker, Reginald; and Plant, David Herbert, to National Research Development Corporation. Yarn control mechanisms and the like. 4,058,245, Cl. 226-174.000.
Hutchinson, Arthur J. L., to Geothermal Investment Co. Working fluids and systems for recovering geothermal or waste heat. 4,057,964, Cl. 60-641.000.
Hutton, Allen H.; and Armstrong, James J., III, to Texas Instruments Incorporated. Choke control. 4,058,097, Cl. 123-119.00F.
Hwang, Jia-Bo Gilbert: *See*—
Hammitt, Frederick G.; Ahmed, Osman Saleh Mohamed; Bhatt, Niranjan Rasik; and Hwang, Jia-Bo Gilbert, 4,058,004, Cl. 73-86.000.
Iacovangelo, Charles D.: *See*—
Baris, Johannes M.; Iacovangelo, Charles D.; and Vogel, Wolfgang M., 4,058,482, Cl. 252-425.300.
Ichihara, Shigehiro: *See*—
Omoto, Yorihiko; Konishi, Tadashi; Ichihara, Shigehiro; and Murai, Hisanori, 4,058,507, Cl. 260-75.00M.
Ichihashi, Hiroshi: *See*—
Shiraishi, Tatsuo; Shimizu, Shinkichi; and Ichihashi, Hiroshi, 4,058,547, Cl. 260-465.300.
Ichikawa, Norio; and Ueno, Sadayasu, to Hitachi, Ltd. Temperature sensor. 4,058,787, Cl. 338-22.00R.
ICI United States Inc.: *See*—
Markiewitz, Kenneth H.; and Restaino, Alfred J., 4,058,656, Cl. 526-215.000.
ICN Pharmaceuticals, Inc.: *See*—
Robins, Roland K.; Shuman, Dennis A.; and Boswell, Kay H., 4,058,659, Cl. 536-27.000.
Idea Didattica Editrice: *See*—
Di Noia, Francesco, 4,057,912, Cl. 35-31.00E.
Idzutsu, Waichiro; Kuroki, Masaaki; Komukai, Shigeru; Terasaki, Daijiro; and Nakajima, Sachie, to Tokyo Gas Co., Ltd. Gas absorbtion process. 4,058,376, Cl. 55-70.000.
Igoe, Robert S., to Merck & Co., Inc. Instant acidified milk gel. 4,058,636, Cl. 426-573.000.
Ikeda, Masahiko: *See*—
Ito, Yoshinori; Kawai, Masaaki; and Ikeda, Masahiko, 4,058,700, Cl. 219-137.00R.
Ikeda, Teppei: *See*—
Murata, Masataka; Takeda, Keiji; and Ikeda, Teppei, 4,058,443, Cl. 204-159.170.
Ikegami, Masuya: *See*—
Ko, Keiun; Takashina, Naomitsu; Shimizu, Senzo; Ikegami, Masuya; and Iwamoto, Yoshinori, 4,058,497, Cl. 260-22.00A.
Ikeno, Keiji: *See*—
Kawashima, Kohei; Ikeno, Keiji; and Nakanishi, Hajime, 4,058,264, Cl. 242-18.0PW.
Ikeuchi, Yoshiharu: *See*—
Tsujimoto, Kenichi; Ikeuchi, Yoshiharu; and Kuriyama, Akira, 4,058,017, Cl. 73-423.00R.
Iko Trading Co., Ltd.: *See*—
Ohno, Tetsuo; and Watanabe, Shoji, 4,058,232, Cl. 215-217.000.
Illinois Tool Works Inc.: *See*—
Schmidt, Bradley J., 4,057,872, Cl. 16-29.000.
Ilnyckyj, Stephan, to Exxon Research & Engineering Co. Polymer combinations useful in distillate hydrocarbon oils to improve cold flow properties. 4,058,371, Cl. 44-62.000.
Ilvespaa, Atso, to Ciba-Geigy Corporation. Imidazoles and pharmaceutical composition. 4,058,617, Cl. 424-270.000.
Imaizumi, Yoshihiro; and Nishida, Yoshihiko, to Fuji Electric Co., Ltd. Information transmission system. 4,058,681, Cl. 179-15.0AL.
IMC Chemical Group, Inc.: *See*—
Barnhard, Phillip, IV; and Kieres, Francis John, 4,058,420, Cl. 149-2.000.
Imperial Chemical Industries Limited: *See*—
Henbest, Richard George Cleveland, 4,058,483, Cl. 252-446.000.
Index-Werke KG Hahn & Tessky: *See*—
Lahm, Heinrich; and Gutbrod, Dieter, 4,058,033, Cl. 82-2.00R.
Lahm, Heinrich; and Gutbrod, Dieter, 4,058,034, Cl. 82-2.00R.
Ing. Alfred Schmidt GmbH, Firma: *See*—
Schmidt, Alfred, Jr., 4,057,915, Cl. 37-43.00C.
Ing. C. Olivetti & C., S.p.A.: *See*—
Giolitti, Nicolo; and Garberi, Sergio, 4,058,707, Cl. 235-448.000.
Ponzano, Gian Luigi, 4,058,847, Cl. 360-132.000.
Ingenjorsfirman R. Ohrnell AB: *See*—
Heydorn, Walter Emil Erich, 4,057,871, Cl. 15-56.000.
Tiberg, Magnus Gustav Georg, 4,058,156, Cl. 164-405.000.
Ingham, Francis H.: *See*—
Panek, George J.; Ingham, Francis H.; Sedig, Albert R.; and Nieman, Gerald R., 4,058,671, Cl. 174-151.000.
Inoue, Hajime: *See*—
Sato, Yoshimasa; Tsukuda, Toshio; Inoue, Hajime; and Mutsuta, Akio, 4,057,978, Cl. 62-331.000.
Inoue, Takayuki; Kakizaki, Tetsuji; and Ochiumi, Masahide, to Mitsubishi Petrochemical Co., Ltd. Process for preparing laminated resin product. 4,058,647, Cl. 428-474.000.
Insley, Gene L.; and Lewis, Merle J., to General Electric Company. Digital timer and method of operating such. 4,057,959, Cl. 58-125.00C.
Institut Francais du Petrole: *See*—
Busson, Christian; Alagy, Jacques; and Cessou, Maurice, 4,058,591, Cl. 423-574.00R.
Le Page, Jean-Francois; Juguin, Bernard; and Miquel, Jean, 4,058,450, Cl. 208-66.000.
Reitz, Ortwin; and Retoret, Jean-Pierre, 4,058,449, Cl. 208-59.000.
Interlake, Inc.: *See*—
Patterson, Francis J.; and DeFilippo, Louis M., 4,058,053, Cl. 100-26.000.
Simmons, James R.; and Rogowski, Robert P., 4,058,270, Cl. 242-105.000.
International Business Machines Corporation: *See*—
Balm, Gerald John, 4,058,795, Cl. 340-146.3WD.
Basi, Jagtar S., 4,057,939, Cl. 51-281.00R.
Cruse, Bernd, 4,058,223, Cl. 214-1.0BB.
Fitzgerald, William Joseph; Shelton, Glenmore Lorraine, Jr.; and Wolfe, Robert Nolan, 4,058,849, Cl. 364-520.000.
Knutson, Gerald Roy; and Shidler, Karl Allen, 4,058,846, Cl. 360-121.000.
Malaviya, Shashi D., 4,058,808, Cl. 340-347.0AD.
Muehldorf, Eugen I.; and Elam, Robert R., 4,058,767, Cl. 324-73.00R.
Voegeli, Otto, 4,058,801, Cl. 365-39.000.
International Communication Sciences: *See*—
Wilkes, Arthur L.; Wade, Fred B.; and Thompson, Robert L., 4,058,676, Cl. 179-1.0SA.
International Inpak, Inc.: *See*—
Koltz, Irving Morton, 4,058,207, Cl. 206-45.340.
International Paper Company: *See*—
May, Edwin A., 4,058,123, Cl. 128-278.000.
International Telephone and Telegraph Corporation: *See*—
Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., 4,058,672, Cl. 178-3.000.
Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., 4,058,838, Cl. 358-257.000.
Panek, George J.; Ingham, Francis H.; Sedig, Albert R.; and Nieman, Gerald R., 4,058,671, Cl. 174-151.000.
Intertrac Viehmann & Co.: *See*—
Fass, Carl, 4,058,322, Cl. 277-96.100.
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, to Yamanouchi Pharmaceutical Co., Ltd. Novel 3,15-dilower alkyl PGE_2 derivatives. 4,058,665, Cl. 560-121.000.
Iowa State University Research Foundation, Inc.: *See*—
Valfells, August, 4,058,440, Cl. 204-101.000.
Ireland, Robert William, to B. F. Goodrich Company, The. Co-cured compositions of amine-terminated liquid polymers and vinylidene-terminated polymers and process for preparation thereof. 4,058,657, Cl. 526-263.000.
Iriarte, Wilfrido R., to Hughes Aircraft Company. Heat pipe with capillary groove and floating artery. 4,058,159, Cl. 165-105.000.
Irion, Eckart: *See*—
Bauer, Kurt; Wittman, Gunther; Mussgay, Manfred; Irion, Eckart; and Geilhausen, Horst, 4,058,599, Cl. 424-92.000.
Irving, Karen E.: *See*—
Kane, Bernard J.; Irving, Karen E.; Bledsoe, James O., Jr.; and Canova, Levy A., 4,058,572, Cl. 260-631.500.
Isac, Mircea. Animal litter collection unit. 4,058,337, Cl. 294-19.00R.
Isakov, Valery Pavlovich: *See*—
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.
Ishii, Yoshio: *See*—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, 4,058,665, Cl. 560-121.000.
Ishii, Yoshiya: *See*—
Taira, Kaoru; Sato, Teruo; Ishii, Yoshiya; Miyata, Yukinori; and Okamoto, Katashi, 4,058,101, Cl. 123-140.0MP.
Ishikawa, Hitoshi; Yamamoto, Kimihiko; Sawada, Toshio; and Kasahara, Takahiko, to Aisin Seiki Kabushiki Kaisha. Extension table for sewing machines. 4,058,072, Cl. 112-258.000.
Isley, John P.: *See*—
Taylor, Michael J.; and Isley, John P., 4,058,079, Cl. 116-114.00H.
Isuzu Motors Limited: *See*—
Hikosaka, Noboru; Watanabe, Mitsuo; and Shiozaki, Shoji, 4,058,092, Cl. 123-32.0ST.
Italo Americana Prentice S.p.A.: *See*—
Dal Negro, Ruggero, 4,058,144, Cl. 139-384.00B.
Itaya, Nobushige: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,058,622, Cl. 424-308.000.
Ito, Kunihiro, to Kawasaki Jukogyo Kabushiki Kaisha. Rotary drum type flying shear machine. 4,058,041, Cl. 83-305.000.

Ito, Shintaro: *See*—
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,058,419, Cl. 148-175.000.

Ito, Takayoshi: *See*—
Okubo, Isao; Ito, Takayoshi; and Mitsui, Norihiko, 4,057,934, Cl. 49-28.000.

Ito, Yoichiro, to United States of America, Health, Education and Welfare. Horizontal flow-through coil planet centrifuge without rotating seals. 4,058,460, Cl. 210-198.00C.

Ito, Yoshinori; Kawai, Masaaki; and Ikeda, Masahiko, to Sumitomo Metal Industries Ltd. Method for horizontal fillet welding of steel plates. 4,058,700, Cl. 219-137.00R.

Ivanov, Andrei Borisovich: *See*—
Muzhzhavlev, Konstantin Dmitrievich; Kosarev, Sergei Petrovich; Schegolev, Vladimir Ivanovich; Ivanov, Andrei Borisovich; Romanenko, Oleg Nikolaevich; Yazev, Vladimir Dmitrievich; and Vasiliev, Alexei Vasilievich, 4,058,448, Cl. 204-244.000.

Iwamoto, Hidenori: *See*—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, 4,058,665, Cl. 560-121.000.

Iwamoto, Yoshinori: *See*—
Ko, Keiun; Takashina, Naomitsu; Shimizu, Senzo; Ikegami, Masuya; and Iwamoto, Yoshinori, 4,058,497, Cl. 260-22.00A.

Iwasaki, Kazuhito: *See*—
Jinnai, Toshio; Matusmoto, Goro; and Iwasaki, Kazuhito, 4,058,475, Cl. 252-299.000.

Iyoda, Syozo: *See*—
Ubukata, Susumu; Mizutani, Yasukazu; Iyoda, Syozo; and Aoi, Hiroshi, 4,058,271, Cl. 242-107.40B.

Jabsen, Felix S., to Babcock & Wilcox Company, The. Traversing and vertically swinging strongback. 4,058,224, Cl. 214-1.0CM.

Jacks, Richard Benton. Open-end wrench. 4,058,032, Cl. 81-125.000.

Jacobsson, Lars-Eric. Automatically self-steering plow/harrow combination with release and reset mechanism connecting harrow to plow. 4,058,169, Cl. 172-191.000.

Jacobus, Charles: *See*—
Dietz, Frederick P., 4,058,132, Cl. 132-73.000.

Jacobus, David P.; Dulaney, Eugene L.; and Grier, Nathaniel, to Merck & Co., Inc. Broad spectrum antibacterial compositions containing tris (hydroxymethyl)-aminomethane and diphenyl and loweralkyl substituted diphenyl polyamines. 4,058,624, Cl. 424-330.000.

Jacobus, David P.; Dulaney, Eugene L.; and Grier, Nathaniel, to Merck & Co., Inc. Broad spectrum antimicrobial compositions containing tris-(hydroxymethyl)aminomethane and polyamines. 4,058,625, Cl. 424-325.000.

Jacobus, Josephine: *See*—
Dietz, Frederick P., 4,058,132, Cl. 132-73.000.

Jacoby, Herbert; and Mendelsohn, Arnold, to United Technologies Corporation. Limited stop elevator dispatching system. 4,058,187, Cl. 187-29.00R.

Jaeger, Karl-Heinz; and Herbrand, Willy, deceased (by Lauterbach, Elisabeth Herbrand nee, heiress), to Solco Basel AG. Therapeutically effective nicotinates and N-oxide nicotinates of aliphatic amines. 4,058,534, Cl. 260-295.50S.

Jager, Gerhard: *See*—
Thomas, Rudolf; Kramer, Wolfgang; Eue, Ludwig; Metzger, Carl; and Jager, Gerhard, 4,058,392, Cl. 71-106.000.

Jager, Horst: *See*—
Klauke, Erich; and Jager, Horst, 4,058,561, Cl. 260-544.00C.

Janome Sewing Machine Co. Ltd.: *See*—
Hanyu, Susumu; and Amano, Takashi, 4,058,073, Cl. 112-258.000.

Janson, Bernt Owe. Method for loading a layer of goods on a movable supporting means and a pallet loader for carrying out the method. 4,058,225, Cl. 214-6.00P.

Jeanmart, Claude: *See*—
Barreau, Michel; Cotrel, Claude; and Jeanmart, Claude, 4,058,611, Cl. 424-250.000.

Jennings, Robert Parry; and Aaroe, Kenneth Thomas, to Solosonic. Piano with sound-enhancing system. 4,058,045, Cl. 84-1.140.

Jerles, James B., to Electro-Thermal Corporation. Fluid heating apparatus. 4,058,702, Cl. 219-321.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See*—
Forsen, Harold K., 4,058,667, Cl. 13-31.000.

Jinnai, Toshio; Matusmoto, Goro; and Iwasaki, Kazuhito, to Dai Nippon Toryo Co., Ltd. Liquid crystal compositions containing cyanocinnamic acid esters. 4,058,475, Cl. 252-299.000.

Johansson, Leif, to Aktiebolaget Svenska Flaktfabriken. Connecting piece for mounting a ventilation element in an opening in a ceiling or wall. 4,058,329, Cl. 285-162.000.

Johansson, Sten E. Power boats with hydrodynamic lifting devices. 4,058,077, Cl. 114-283.000.

Johansson, Sven Torild Kruse, to Telefonaktiebolaget L M Ericsson. Arrangement for ciphering and deciphering of information. 4,058,673, Cl. 178-22.000.

John, Wolfgang: *See*—
Streubel, Hans; Backhaus, Karl; and John, Wolfgang, 4,058,154, Cl. 164-82.000.

Johns-Manville Corporation: *See*—
Faulkner, Duane Harold; Smith, Harvell Morton; and Howard, Larry Edward, 4,058,386, Cl. 65-6.000.

Johnson, Bruce K.; Laskin, Irving; and Whiteside, George D., to Polaroid Corporation. Photographic exposure apparatus for providing small apertures. 4,058,817, Cl. 354-26.000.

Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Fixed time delay quench strobe. 4,058,818, Cl. 354-33.000.

Johnson & Johnson: *See*—
Ness, Irving S., 4,058,125, Cl. 128-287.000.

Johnson, Robert B.: *See*—
Morse, Hugh B.; and Johnson, Robert B., 4,058,206, Cl. 206-44.00R.

Johnson, Robert M. Head positioner and arm rest for eye surgery. 4,058,112, Cl. 128-1.00R.

Johnston, Donald Leroy: *See*—
Choksi, Pradip Vinobchandra; Johnston, Donald Leroy; and Seemayer, Walter, 4,058,121, Cl. 128-221.000.

Johnston, Robert C.: *See*—
McNeil, Sharon S.; Bloomquist, Carl R.; and Johnston, Robert C., 4,058,399, Cl. 96-75.000.

Jones, Edna. See-through sewing gauge. 4,058,070, Cl. 112-153.000.

Jones, Marvin R.; and Helfer, Paul E., to Cameron Iron Works, Inc. Pipe disconnecting apparatus. 4,057,887, Cl. 29-240.000.

Jones, Peter Hadley; Bariana, Dilbagh Singh; Fung, Anthony Kei Lun; Martin, Yvonne Connolly; Kyncl, Jaroslav; and Lall, Amrit, to Abbott Laboratories. 4-Aroyl-substituted phenoxy acetic acids. 4,058,559, Cl. 260-520.00C.

Jones, Robert L., to University of Edinburgh, The University Court of the. Prostaglandin C_3. 4,058,664, Cl. 560-121.000.

Jones, Thomas Alwyn: *See*—
Firth, Jack Graham; Jones, Thomas Alwyn; and Rimmington, Brenda, 4,057,996, Cl. 73-23.000.

Joseph, Robert P. Rifle barrel stabilizer. 4,057,924, Cl. 42-75.00A.

Jossel, Franklin: *See*—
Mammino, Joseph; and Jossel, Franklin, 4,058,397, Cl. 96-15.00D.

Jugle, Don B.; and Lipani, Anthony F., to Xerox Corporation. Emission controller for development apparatus. 4,058,086, Cl. 118-653.000.

Juguin, Bernard: *See*—
Le Page, Jean-Francois; Juguin, Bernard; and Miquel, Jean, 4,058,450, Cl. 208-66.000.

Jung, Hans; Kovacs, Jenoe; Dussel, Wilhelm; and Lehmann, Helmut, to BASF Aktiengesellschaft. Electrical insulation of metallic conductors. 4,058,640, Cl. 427-118.000.

Jung, Richard G.: *See*—
Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; and Gallagher, William J., 4,058,486, Cl. 250-493.000.

Junginger, Erich: *See*—
Linder, Ernst; Hertfelder, Wilhelm; Schnaibel, Eberhard; and Junginger, Erich, 4,058,255, Cl. 237-12.30B.

Juntgen, Harald; Klein, Jurgen; and Gappa, Gunther, to Bergwerksverband GmbH. Method of regenerating particulate adsorption agents. 4,058,374, Cl. 55-60.000.

K. A. Schmersal & Co. Schaltgeratefabrik: *See*—
Schulz, Siegfried; Eicker, Karl G.; and Reinke, August, 4,058,693, Cl. 200-67.00F.

Kabel-und Metallwerke Gutehoffnungshutte AG.: *See*—
Glander, Fritz; and Voigt, Hermann Uwe, 4,058,583, Cl. 264-176.00R.

Kablaoui, Mahmoud S., to Texaco Inc. Detergent composition. 4,058,472, Cl. 252-89.00B.

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Komura, Yasuyuki, 4,058,674, Cl. 358-260.000.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,058,051, Cl. 93-88.000.

Kabushiki Kaisha Shinko Seisakusho: *See*—
Komatsu, Atsushi; Miyazawa, Kuichiro; Yamaura, Yoshotomo; and Asanuma, Akira, 4,058,134, Cl. 137-38.000.

Kageyama, Paul: *See*—
Richardson, David; and Kageyama, Paul, 4,058,765, Cl. 324-61.00R.

Kakizaki, Tetsuji: *See*—
Inoue, Takayuki; Kakizaki, Tetsuji; and Ochiumi, Masahide, 4,058,647, Cl. 428-474.000.

Kameda, Tamotsu. Two-masted lifting apparatus. 4,058,293, Cl. 254-89.00H.

Kamei, Tatsuya: *See*—
Miyoshi, Tadahiko; Kurihara, Yasutoshi; Kamei, Tatsuya; and Ogawa, Takuzo, 4,058,821, Cl. 357-19.000.

Kamennov, Nikolai Alexandrovich: *See*—
Ovchinnikov, Viktor Georgievich; Noritsa, Nadezhda Petrovna; Grib, Maria Mefodievna; Kamennov, Nikolai Alexandrovich; and Skvortsova, Elena Konstantinovna, 4,058,618, Cl. 424-273.00R.

Kane, Bernard J.; Irving, Karen E.; Bledsoe, James O., Jr.; and Canova, Levy A., to SCM Corporation. Hydrogenation of cyclic unsaturated compounds. 4,058,572, Cl. 260-631.500.

Kanner, Bernard: *See*—
Prokai, Bela; and Kanner, Bernard, 4,058,493, Cl. 260-2.5AH.
Prokai, Bela; and Kanner, Bernard, 4,058,494, Cl. 260-2.5AH.

Kanomata, Ichiro: *See*—
Sakudo, Noriyuki; Tokiguchi, Katsumi; and Kanomata, Ichiro, 4,058,748, Cl. 313-156.000.

Kao, Charles T.; Lafevers, James O.; and Walker, Donny R., to Recognition Equipment Incorporated. MICR data lift system. 4,058,706, Cl. 235-449.000.

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Cama, Lovji D.; Christensen, Burton G.; Karady, Sandor; and Sletzinger, Meyer, 4,058,661, Cl. 544-21.000.
Karrer, Friedrich; and Farooq, Saleem, to Ciba-Geigy Corporation. Combatting insects and acarids with new phenoxyphenylalkoxy esters. 4,058,627, Cl. 424-341.000.
Kasahara, Takahiko: *See*—
Ishikawa, Hitoshi; Yamamoto, Kimihiko; Sawada, Toshio; and Kasahara, Takahiko, 4,058,072, Cl. 112-258.000.
Kaspari, William J.; Wong, Herman; and Kirch, Joseph L., to Palo Alto Research Associates. Blood pressure measuring apparatus. 4,058,117, Cl. 128-2.05A.
Kasprzak, Vincent D., to Arvin Industries, Inc. Method and apparatus for recording a single video frame. 4,058,840, Cl. 360-10.000.
Kataoka, Shigeyuki: *See*—
Mori, Takashi; Takaku, Sakae; Oi, Nobuhiro; Shindo, Minoru; Hirano, Takeaki; Kataoka, Shigeyuki; and Furuno, Kouji, 4,058,523, Cl. 544-165.000.
Katsutani, Ryoseki: *See*—
Takechi, Hiroshi; Abe, Mitsunobu; Katsutani, Ryoseki; and Saito, Yoshio, 4,057,989, Cl. 72-128.000.
Kaule, Wittich: *See*—
Gauch, Wolfgang; Kaule, Wittich; and Pauli, Guenter, 4,057,919, Cl. 40-2.200.
Kawaguchi, Hiroshi; and Nishikawa, Kohji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sealing and adjusting means in a disk brake. 4,058,084, Cl. 188-71.800.
Kawai, Masaaki: *See*—
Ito, Yoshinori; Kawai, Masaaki; and Ikeda, Masahiko, 4,058,700, Cl. 219-137.00R.
Kawamoto, Hirohisa: *See*—
Allen, Elmer Lawrence, Jr.; and Kawamoto, Hirohisa, 4,058,776, Cl. 330-299.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Ito, Kunihiro, 4,058,041, Cl. 83-305.000.
Kawashima, Kohei; Ikeno, Keiji; and Nakanishi, Hajime, to Teijin Limited. Yarn wound package provided with a transfer tail wind and method for forming the transfer tail wind. 4,058,264, Cl. 242-18.0PW.
Kay-Fries Chemicals, Inc.: *See*—
Kesslin, George, 4,058,409, Cl. 106-271.000.
Kaye, Sidney P., to Tree Island Steel Co. Ltd. Wire connector. 4,057,878, Cl. 24-134.00R.
Keefe, Harry J. Portable refrigerator. 4,058,384, Cl. 62-457.000.
Keene Corporation: *See*—
Bartik, Ivan, 4,058,463, Cl. 210-317.000.
Kekesy, Tibor; Szeberenyi, Szabolcs; Beer, Gyorgy; Dudas, Antal; Hajos, Gyorgy; Szporny, Laszlo; and Czajlik, Eva, nee Csizer, to Richter Gedeon Vegyeszeti Gyar Rt. Steroids effective against heavy-metal poisoning. 4,058,522, Cl. 260-239.570.
Keller, Hansjurg: *See*—
Paschedag, Hansjoachim; and Keller, Hansjurg, 4,058,726, Cl. 250-353.000.
Keller, Wilbur S.: *See*—
Langford, James W., Jr.; and Keller, Wilbur S., 4,058,177, Cl. 175-374.000.
Kelley, Robert D.: *See*—
Gardner, Richard H.; and Kelley, Robert D., 4,058,190, Cl. 188-218.0XL.
Kellwood Company: *See*—
Matthews, Robert M.; and Lawson, William J., 4,057,880, Cl. 28-154.000.
Kelsey, Amos P.; Palumbo, John A.; and Thiel, James L., to Bethlehem Steel Corporation. Bender roll guard. 4,057,990, Cl. 72-166.000.
Kennecott Copper Corporation: *See*—
Crimes, Peter B., 4,058,394, Cl. 75-61.000.
Kennedy, Paul G., to Westinghouse Electric Corporation. Scan conversion apparatus. 4,058,835, Cl. 358-134.000.
Kent Manufacturing Co., Inc.: *See*—
Ankenman, Thomas W.; and Brinker, Lee J., 4,058,170, Cl. 172-311.000.
Blair, Calvin B.; and Hake, Kenneth A., 4,058,172, Cl. 172-311.000.
Kerns, Steven L., to Management Utilities, Inc. Method and device for livestock record keeping. 4,057,922, Cl. 40-124.200.
Kessler, Gerald. Insulating spacer for double insulated glass. 4,057,945, Cl. 52-398.000.
Kesslin, George, to Kay-Fries Chemicals, Inc. Anti-transpirant composition. 4,058,409, Cl. 106-271.000.
Keyes, George B.; and Murtaugh, Justin J., to Drackett Company, The. Drain cleaning composition. 4,058,474, Cl. 252-160.000.
Khajezadeh, Heshmat; and Ahrens, Stephen Carl, to RCA Corporation. Controllably valued resistor. 4,057,894, Cl. 29-577.00C.
Khalifa, Ramzi A.: *See*—
Prather, Joseph E.; and Khalifa, Ramzi A., 4,058,334, Cl. 292-241.000.
Kiehs, Karl; Adolphi, Heinrich; Huber, Rolf; and Baumann, Annegrit, to BASF Aktiengesellschaft. Method of controlling insects with O,O-dialkylphosphonic acid esters and the O,O-dialkylphosphonic acid esters. 4,058,606, Cl. 424-217.000.
Kieres, Francis John: *See*—
Barnhard, Phillip, IV; and Kieres, Francis John, 4,058,420, Cl. 149-2.000.
Kikuchi, Yoshiki, to Fuji Xerox Co. Ltd. Image pickup element and system utilizing magnetic bubbles. 4,058,800, Cl. 365-3.000.
Kim, Taeo: *See*—
Shimizu, Masao, 4,058,704, Cl. 219-528.000.
Kimura, Rokusaburo; and Horii, Sadashige, to Matsushita Electric Works, Ltd. Alarm device of clocks. 4,057,957, Cl. 58-21.155.
King, George: *See*—
Phelps, John H., Sr., 4,057,854, Cl. 2-128.000.
King, John Thomas: *See*—
Higgins, Larry; King, John Thomas; Butler, Blondie; and Struewing, Francis R., deceased, 4,057,860, Cl. 5-247.000.
King, Lamar L., II, to Ford Motor Company. Carbon cell. 4,058,380, Cl. 55-387.000.
King, Laurence F.: *See*—
Serratore, Joseph; King, Laurence F.; Sutherland, Thomas H.; and Wallace, James R., 4,058,495, Cl. 260-17.00A.
King, Peggy: *See*—
Phelps, John H., Sr., 4,057,854, Cl. 2-128.000.
King, Richard Creighton. Navigational instruments. 4,057,906, Cl. 33-278.000.
Kinsinger, William C., to Metagraphic Systems, Inc. Apparatus for removing a sheet from a stack of sheets. 4,058,218, Cl. 209-80.500.
Kinson, Philip L.; and Orlando, Charles M., to General Electric Company. Brominated biphenol process. 4,058,570, Cl. 260-620.000.
Kirch, Joseph L.: *See*—
Kaspari, William J.; Wong, Herman; and Kirch, Joseph L., 4,058,117, Cl. 128-2.05A.
Kirchoff, Francis D., to Alco Electronic Products, Inc. Combined pilot light and ground testing assembly. 4,058,764, Cl. 324-51.000.
Kirk-Dyson Designs Ltd.: *See*—
Dyson, James, 4,058,344, Cl. 301-7.000.
Kirk, Russell F.: *See*—
Fahlen, Theodore S.; and Kirk, Russell F., 4,058,778, Cl. 331-94.50G.
Kishi, Yoshio; and Nagami, Masaru, to Sony Corporation. Magnetic tape recording and/or reproducing apparatus with device for recording and/or reproducing control signals. 4,058,841, Cl. 360-27.000.
Kiyonaga, Kingo; Ago, Ryousei; and Furuichi, Sei, to Hitachi Metals, Ltd. Back material of metal band saw high in fatigue strength. 4,058,650, Cl. 428-683.000.
Klauke, Erich; and Jager, Horst, to Bayer Aktiengesellschaft. 2-Chloromethylphenylcarbamic acid fluoride. 4,058,561, Cl. 260-544.00C.
Kleimann, Helmut: *See*—
von Bonin, Wulf; Kleimann, Helmut; and Post, Udo, 4,058,492, Cl. 260-2.5AM.
Klein, Jurgen: *See*—
Juntgen, Harald; Klein, Jurgen; and Gappa, Gunther, 4,058,374, Cl. 55-60.000.
Kleiss, Louis D., to Phillips Petroleum Company. Apparatus and method for measuring low boiling component contained in relatively high-boiling liquid. 4,057,995, Cl. 73-23.000.
Kleist, Dale, to Owens-Corning Fiberglas Corporation. Method for transporting glass fibers. 4,058,385, Cl. 65-2.000.
Klementowski, Frank M.: *See*—
Sawada, Fred H.; Klementowski, Frank M.; and Bishop, James S., 4,058,804, Cl. 340-248.00A.
Klich, Edward J.: *See*—
Milan, Otto G.; and Klich, Edward J., 4,058,057, Cl. 101-148.000.
Klimek, Boleslaw M., to Echlin Manufacturing Company, The. Brake apparatus including control valve with integral check valve. 4,058,345, Cl. 303-6.00M.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Werner, Reinhold, 4,057,960, Cl. 60-39.030.
Kloimstein, Engelbert: *See*—
Schonbeck, Rupert; Kloimstein, Engelbert; and Wittmann, Erwin, 4,058,390, Cl. 71-92.000.
Klopfenstein, King L.: *See*—
Puccetti, Ralph P.; and Klopfenstein, King L., 4,058,268, Cl. 242-72.00R.
Knapp, Merton C.; and Galloway, Charles Rex, to Green Hills, Inc. Apparatus for opening and washing cans. 4,058,412, Cl. 134-24.000.
Knell, Martin, to Ciba-Geigy Corporation. Process for the addition of gaseous non-halogenated olefins and acetylenes to perfluoroalkyl iodides. 4,058,573, Cl. 260-653.10T.
Knollmueller, Karl O., to Olin Corporation. Alkoxysilane double cluster compounds with silicone bridges and their preparation and use. 4,058,546, Cl. 260-448.80R.
Knutson, Gerald Roy; and Shidler, Karl Allen, to International Business Machines Corporation. Grounded transducer for magnetic record disks. 4,058,846, Cl. 360-121.000.
Ko, Keiun; Takashina, Naomitsu; Shimizu, Senzo; Ikegami, Masuya; and Iwamoto, Yoshinori, to Mitsubishi Gas Chemical Company, Inc. One package system cold-setting coating compositions. 4,058,497, Cl. 260-22.00A.
Kobayashi, Fumio; and Koshigoe, Shozo, to Sansui Electric Co., Ltd. Loudspeaker system for use in a stereophonic sound reproduction system. 4,058,675, Cl. 179-1.00G.
Koch, Dirk: *See*—
Schuster-Woldan, Hans; Weingand, Kaspar; and Koch, Dirk, 4,058,432, Cl. 156-659.000.
Kohno, Takashige; Takamaru, Takeshi; Kuwahara, Akiyasu; and Mori, Michitsugu, to Hitachi, Ltd. Carburetor for use in internal combustion engine. 4,058,093, Cl. 123-75.00B.
Koltz, Irving Morton, to International Inpak, Inc. Container. 4,058,207, Cl. 206-45.340.
Komatsu, Atsushi; Miyazawa, Kuichiro; Yamaura, Yoshotomo; and Asanuma, Akira, to Kabushiki Kaisha Shinko Seisakusho. Interceptor actuated by seismic vibrations. 4,058,134, Cl. 137-38.000.

Komukai, Shigeru: *See—*
Idzutsu, Waichiro; Kuroki, Masaaki; Komukai, Shigeru; Terasaki, Daijiro; and Nakajima, Sachie, 4,058,376, Cl. 55-70.000.

Komura, Yasuyuki, to Kabushiki Kaisha Ricoh. Graphic information compression method and system. 4,058,674, Cl. 358-260.000.

Kondratieva, Tatyana Fedorovna: *See—*
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.

Koninklijke Emballage Industrie Van Leer B.V.: *See—*
Evans, Albert E. J.; and Turner, Peter G., 4,058,632, Cl. 426-126.000.

Konishi, Tadashi: *See—*
Omoto, Yorihiko; Konishi, Tadashi; Ichihara, Shigehiro; and Murai, Hisanori, 4,058,507, Cl. 260-75.00M.

Kontsevich, Georgy Mikhailovich: *See—*
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.

Koonce, George W., to United States of America, Air Force. Remotely actuated two stage structural latch. 4,058,331, Cl. 292-97.000.

Koppe, Herbert: *See—*
Kummer, Werner; Stahle, Helmut; Koppe, Herbert; Haarmann, Walter; and Reichl, Richard, 4,058,616, Cl. 424-267.000.

Kosanovich, Nicholas S., to Westinghouse Electric Corporation. Generator seal oil supply system. 4,058,320, Cl. 277-3.000.

Kosarev, Sergei Petrovich: *See—*
Muzhzhavlev, Konstantin Dmitrievich; Kosarev, Sergei Petrovich; Schegolev, Vladimir Ivanovich; Ivanov, Andrei Borisovich; Romanenko, Oleg Nikolaevich; Yazev, Vladimir Dmitrievich; and Vasiliev, Alexei Vasilievich, 4,058,448, Cl. 204-244.000.

Koshigoe, Shozo: *See—*
Kobayashi, Fumio; and Koshigoe, Shozo, 4,058,675, Cl. 179-1.00G.

Kotschak, Otto: *See—*
Reiss, Karl Hans; Kotschak, Otto; and Conrad, Bernhard, 4,058,721, Cl. 250-213.0VT.

Kovacs, Jenoe: *See—*
Jung, Hans; Kovacs, Jenoe; Dussel, Wilhelm; and Lehmann, Helmut, 4,058,640, Cl. 427-118.000.

Kozakiewicz, Hugo; and Reuter, Wolfgang, to Dornier GmbH. Captive remote-controlled helicopter. 4,058,277, Cl. 244-17.170.

Kramer, Francis J.; Rothfuss, Robert G.; and Wise, William C., to Senco Products, Inc. Clamp nail. 4,058,047, Cl. 85-11.000.

Kramer, Jurgen: *See—*
Broghammer, Werner; Kramer, Jurgen; and Laufer, Helmut, 4,058,687, Cl. 179-100.110.

Kramer, Wolfgang: *See—*
Thomas, Rudolf; Kramer, Wolfgang; Eue, Ludwig; Metzger, Carl; and Jager, Gerhard, 4,058,392, Cl. 71-106.000.

Kranefeld, Wilhelm; and Schneider, Helmut, to O & K Orenstein & Koppel Aktiengesellschaft. Telescopic boom with hydraulic actuating mechanism. 4,057,942, Cl. 52-115.000.

Kraus, Bernd: *See—*
Drews, Ulrich; Kraus, Bernd; Singer, Erich; and Schnurle, Hans, 4,058,106, Cl. 123-198.0DB.

Kroger, Keijo Kalevi, to Valmet Oy. Straddle carrier. 4,058,183, Cl. 180-89.100.

Krogh, Soren-Christian, to Radiometer A/S. Process for automatic titration. 4,058,365, Cl. 23-230.00R.

Krokhin, Vladimir Andreevich: *See—*
Prutkovsky, Evgeny Nikolaevich; Bermatov, Mikhail Albertovich; Tarasov, Evgeny Alexandrovich; Ozerov, Valery Ilich; Fedosjuk, Alexandr Fedorovich; and Krokhin, Vladimir Andreevich, 4,057,966, Cl. 60-678.000.

Kropiwnicki, Tadek M.: *See—*
Abell, Richard S.; and Kropiwnicki, Tadek M., 4,057,979, Cl. 62-469.000.

Kruger, Gunther, to Steele Chemicals Co. Ltd. 4,6,8(14)-Triene steroids. 4,058,539, Cl. 260-397.450.

Krutsch, John R.: *See—*
Bubley, Henry J.; and Krutsch, John R., 4,058,307, Cl. 271-85.000.

Kucharzyk, Werner: *See—*
Bellenberg, Heinz; Kucharzyk, Werner; Rohde, Wolfgang; and Siebert, Werner, 4,058,230, Cl. 214-18.200.

Kuhls, Jurgen; Martini, Thomas; and Steininger, Alfred, to Hoechst Aktiengesellschaft. Process for the manufacture of paste-extrudable polymers of tetrafluoroethylene. 4,058,578, Cl. 260-884.000.

Kuklies, Milton C.: *See—*
Marshall, Jeffrey D.; and Kuklies, Milton C., 4,058,643, Cl. 428-198.000.

Kumazawa, Toshiharu: *See—*
Futai, Norio; Murakami, Toshio; Takahara, Yoshimasa; and Kumazawa, Toshiharu, 4,058,481, Cl. 252-321.000.

Kummer, Werner; Stahle, Helmut; Koppe, Herbert; Haarmann, Walter; and Reichl, Richard, to Boehringer Ingelheim GmbH. 2-[N-(1,3-diamino-isopropyl)-amino]-4-phenyl-2-imidazolines and salts thereof. 4,058,616, Cl. 424-267.000.

Kunert, Gale F.: *See—*
Staff, Charles H.; Kunert, Gale F.; and Christians, Tom A., 4,058,633, Cl. 426-315.000.

Kunz, Werner, to W. Kunz AG. Method for drying agricultural feed materials, pulp-like materials. 4,058,634, Cl. 426-456.000.

Kuramoto, Atuo: *See—*
Yonemitsu, Eiichi; Sugio, Akitoshi; Kuramoto, Atuo; and Urabe, Hiroyuki, 4,058,504, Cl. 260-47.0ET.

Kurihara, Yasutoshi: *See—*
Miyoshi, Tadahiko; Kurihara, Yasutoshi; Kamei, Tatsuya; and Ogawa, Takuzo, 4,058,821, Cl. 357-19.000.

Kuriyama, Akira: *See—*
Tsujimoto, Kenichi; Ikeuchi, Yoshiharu; and Kuriyama, Akira, 4,058,017, Cl. 73-423.00R.

Kuroi, Yasuyuki: *See—*
Tashiro, Sadaji; and Kuroi, Yasuyuki, 4,058,037, Cl. 83-70.000.

Kuroki, Masaaki: *See—*
Idzutsu, Waichiro; Kuroki, Masaaki; Komukai, Shigeru; Terasaki, Daijiro; and Nakajima, Sachie, 4,058,376, Cl. 55-70.000.

Kurz, Robert A.; and Whirlow, Donald K., to Electric Power Research Institute. Combustible gas-in-oil detector. 4,058,373, Cl. 55-16.000.

Kushlefsky, Bernard G., to M&T Chemicals Inc. Novel method for preparing organotin compounds. 4,058,544, Cl. 260-429.700.

Kuwabara, Katsutoshi; and Goto, Katsuaki, to Hochiki Corporation. Oscillating circuit. 4,058,777, Cl. 331-57.000.

Kuwahara, Akiyasu: *See—*
Kohno, Takashige; Takamaru, Takeshi; Kuwahara, Akiyasu; and Mori, Michitsugu, 4,058,093, Cl. 123-75.00B.

Kyncl, Jaroslav: *See—*
Jones, Peter Hadley; Bariana, Dilbagh Singh; Fung, Anthony Kei Lun; Martin, Yvonne Connolly; Kyncl, Jaroslav; and Lall, Amrit, 4,058,559, Cl. 260-520.00C.

Kyushima, Tatsuo: *See—*
Morisawa, Kunio; Minemoto, Isamu; and Kyushima, Tatsuo, 4,058,193, Cl. 192-109.00F.

Kyzer, James Alexander: *See—*
Smith, Joe Delano; McCall, David Daniel; and Kyzer, James Alexander, 4,057,893, Cl. 29-560.000.

LaBianco, Richard A. Water bed. 4,057,862, Cl. 5-370.000.

Labovitz, Jeffery N.: *See—*
Henrick, Clive A.; and Labovitz, Jeffery N., 4,058,666, Cl. 560-126.000.

Lada, Arnold: *See—*
Wakeman, Reginald L.; Dudzinski, Zdzislaw W.; and Lada, Arnold, 4,058,488, Cl. 252-542.000.

Ladd, John H., to Eastman Kodak Company. Document copying apparatus. 4,058,828, Cl. 358-80.000.

Lafevers, James O.: *See—*
Kao, Charles T.; Lafevers, James O.; and Walker, Donny R., 4,058,706, Cl. 235-449.000.

Laffont, Paul: *See—*
de Saint Palais, Jacques; Laffont, Paul; and Mourlevat, Jean, 4,058,137, Cl. 137-236.00S.

Lahm, Heinrich; and Gutbrod, Dieter, to Index-Werke KG Hahn & Tessky. Automatic turret lathe. 4,058,033, Cl. 82-2.00R.

Lahm, Heinrich; and Gutbrod, Dieter, to Index-Werke KG Hahn & Tessky. Lathe with multiple tool turret. 4,058,034, Cl. 82-2.00R.

Lake, Don W., to Comdial Corporation. Digital multitone generator for telephone dialing. 4,058,805, Cl. 340-347.0DA.

Lall, Amrit: *See—*
Jones, Peter Hadley; Bariana, Dilbagh Singh; Fung, Anthony Kei Lun; Martin, Yvonne Connolly; Kyncl, Jaroslav; and Lall, Amrit, 4,058,559, Cl. 260-520.00C.

Lamanna, Joe: *See—*
Wolgast, Raymond P.; and Lamanna, Joe, 4,057,994, Cl. 72-441.000.

Lamberti, Vincent: *See—*
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,058,554, Cl. 560-180.000.

Land O'Frost Inc.: *See—*
Schneider, Walter Max, 4,057,951, Cl. 53-55.000.

Langford, James W., Jr.; and Keller, Wilbur S., to Dresser Industries, Inc. Asymmetric gage insert for an earth boring apparatus. 4,058,177, Cl. 175-374.000.

Lantec Industries, Ltd.: *See—*
Morfitt, John B., 4,058,295, Cl. 254-184.000.

Lark, John C.: *See—*
Holda, Eugene M.; and Lark, John C., 4,058,496, Cl. 260-21.000.

Lashway, Robert William, to Union Carbide Corporation. Process for producing an improved boron nitride crucible. 4,058,579, Cl. 264-81.000.

Laskin, Irving: *See—*
Johnson, Bruce K.; Laskin, Irving; and Whiteside, George D., 4,058,817, Cl. 354-26.000.

Latham, Roger D. Collapsible brush. 4,057,868, Cl. 15-203.000.

Laufer, Helmut: *See—*
Broghammer, Werner; Kramer, Jurgen; and Laufer, Helmut, 4,058,687, Cl. 179-100.110.

Lauper, Warner R., to Quadrastat Controls Corporation. Pressure compensated flexible bellows. 4,058,018, Cl. 74-18.200.

Lauterbach, Elisabeth Herbrand nee, heiress: *See—*
Jaeger, Karl-Heinz; and Herbrand, Willy, deceased, 4,058,534, Cl. 260-295.50S.

Lawrence, Jackson, to Cluett, Peabody & Co., Inc. Ammonia recovery by scrubbing and condensing. 4,058,375, Cl. 55-70.000.

Lawrie, William Eugene: *See*—
Holt, Amos Earl; Lawrie, William Eugene; and Birks, Albert Stingel, 4,058,762, Cl. 324-216.000.
Lawson, William J.: *See*—
Matthews, Robert M.; and Lawson, William J., 4,057,880, Cl. 28-154.000.
Lear Siegler, Inc.: *See*—
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Lectrolarm Custom Systems, Inc.: *See*—
Smith, William V., 4,058,831, Cl. 358-87.000.
Lee, Henry L., Jr.; Orlowski, Jan A.; and Fromm, Carl H., to Lee Pharmaceuticals. Photopolymerizable composition for formed-in-place artificial nails. 4,058,442, Cl. 204-159.120.
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Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Hartmann, Hans-Joerg; Spoor, Herbert; Uhl, Karl; Lehner, August; Gutermann, Winfried; and Motz, Herbert, 4,058,646, Cl. 428-425.000.
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Macovski, Albert, 4,058,003, Cl. 73-609.000.
Leong, Henry: *See*—
Caparrelli, Frederick; and Leong, Henry, 4,058,120, Cl. 128-188.000.
Le Page, Jean-Francois; Juguin, Bernard; and Miquel, Jean, to Institut Francais du Petrole. Process for producing aromatic hydrocarbons of high purity. 4,058,450, Cl. 208-66.000.
Leschinger, Matthew L., to Utility Products Co. Buried cable enclosure. 4,058,670, Cl. 174-38.000.
Leshin, Richard, to Goodyear Tire & Rubber Company, The. Process of preparing an amino thiazolyl disulfide using a water soluble salt in combination with wet 2,2-dithiobis(benzothiazole). 4,058,524, Cl. 544-136.000.
Lestradet, Maurice Cyril. Selectable, anti-leak, nozzle-holder. 4,058,260, Cl. 239-394.000.
Leveen, Harry H. Device for the fracture of the blood vessel lining. 4,058,126, Cl. 128-305.000.
Lever Brothers Company: *See*—
Canter, Carl Robert, 4,058,473, Cl. 252-121.000.
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,058,554, Cl. 560-180.000.
Prince, Leon M., 4,058,487, Cl. 252-552.000.
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Levin, Robert E.: *See*—
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Lewis Industries, Inc.: *See*—
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Insley, Gene L.; and Lewis, Merle J., 4,057,959, Cl. 58-125.00C.
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Claassen, Manfred, 4,058,824, Cl. 357-15.000.
Schoberl, Werner, 4,058,750, Cl. 313-500.000.
Lienhard, Robert W., to Swiss Fabricating, Inc. Modular scaffolding for assembling the inside of an LNG vessel. 4,057,943, Cl. 52-126.000.
Linder, Ernst; Hertfelder, Wilhelm; Schnaibel, Eberhard; and Jungingер, Erich, to Robert Bosch GmbH. Heater control for a motor vehicle. 4,058,255, Cl. 237-12.30B.
Lindkvist, Erik Allan. Apparatus for removing polluting matter arising in flame cutting and like operations. 4,058,299, Cl. 266-48.000.
Lindmayer, Joseph, to Solarex Corporation. Fabrication of thin film solar cells utilizing epitaxial deposition onto a liquid surface to obtain lateral growth. 4,058,418, Cl. 148-175.000.
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Jugle, Don B.; and Lipani, Anthony F., 4,058,086, Cl. 118-653.000.
Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., to Uniroyal, Inc. Hexahalo-1,4-dihydro-1,4-methanonaphthalene-5,8-diol phenylsulfones. 4,058,568, Cl. 260-607.0AR.
Loboda, Robert S., to UOP Inc. Alkylaromatic hydrocarbon dealkylation process. 4,058,452, Cl. 208-134.000.
Lockwood Manufacturing Company: *See*—
Schmid, Richard R., 4,058,039, Cl. 83-155.000.
Loge, Olaf: *See*—
Ahrens, Hanns; Biere, Helmut; Rufer, Clemens; Schmiechen, Ralph; Schroeder, Eberhard; Loge, Olaf; Losert, Wolfgang; and Schillinger, Ekkehard, 4,058,619, Cl. 424-275.000.
Lohmann, Frank; Lugrin, Raymond; and Baumann, Hanspeter, to Ciba-Geigy Corporation. Non-dusting, readily free-flowing granules of optical brighteners. 4,058,480, Cl. 252-301.210.
Lok-A-Wat, Inc.: *See*—
Dalton, James H.; Stover, S. Dalton; and Roney, Robert M., 4,058,740, Cl. 307-116.000.
Long, E. David, to Allied Chemical Corporation. Control computer for fuel injection system. 4,058,709, Cl. 364-424.000.
Longman, Rodney A.; and Chiaramonte, Thomas J., to Pylon Corporation. Windshield wiper universal connector for bayonet and hook arms. 4,057,869, Cl. 15-250.320.
Longwell, John P.: *See*—
Cahn, Robert P.; and Longwell, John P., 4,058,575, Cl. 260-666.00P.
L'Oreal: *See*—
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Lorlin Industries Inc.: *See*—
Quinn, Peter W., 4,058,219, Cl. 209-81.00R.
Lorsch, Johannes. Apparatus for stacking substantially flat articles. 4,058,308, Cl. 271-178.000.
Lorusso, Simone: *See*—
Abbruzzese, Luigi; Gozzo, Franco; Rossi, Giorgio; Masoero, Marcella; Lorusso, Simone; Bonola, Paola; and Tamburin, Gino, 4,058,613, Cl. 424-258.000.
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Louden, William G. Dense paper. 4,058,648, Cl. 428-511.000.
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Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., 4,058,672, Cl. 178-3.000.
Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., 4,058,838, Cl. 358-257.000.
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Lowell Corporation: *See*—
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Loyd, Robert W., Jr.: *See*—
Gavrun, Michael T.; and Loyd, Robert W., Jr., 4,058,321, Cl. 277-81.00P.
Lubrizol Corporation, The: *See*—
Hoke, Donald Irvin, 4,058,469, Cl. 252-51.50R.
Lugosi, Gyorgy: *See*—
Zsolnai, Tibor; Lugosi, Gyorgy; Szepesi, Istvan; Bakonyi, Maria; Racz, Istvan; and Radvany nee Hegedus, Erzsebet, 4,058,608, Cl. 424-226.000.
Lugrin, Raymond: *See*—
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Luke, Clark. Portable self-protective device. 4,058,237, Cl. 222-78.000.
Lund, Owen H. Book matches with safety lighting features. 4,058,208, Cl. 206-109.000.
Lundberg, John P.: *See*—
Schellin, Carl W.; and Lundberg, John P., 4,058,105, Cl. 123-198.0DC.
Lundin, Ronny Hugo Loritz: *See*—
Sievertsson, Hans; Lundin, Ronny Hugo Loritz; and Sjodahl, Gertrud Elisabeth Westin, 4,058,512, Cl. 260-112.50R.
Lundkvist, Leif Sigurd: *See*—
Svensson, Christer Martinus; Lundkvist, Leif Sigurd; Lundstrom, Kurt Ingemar; and Shivaraman, Madurai Somanathan, 4,058,368, Cl. 23-254.00E.
Lundstrom, Kurt Ingemar: *See*—
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Lunkenheimer Company, The: *See*—
Paptzun, George J.; and Monnig, Anthony B., 4,057,883, Cl. 29-157.10R.
M&T Chemicals Inc.: *See*—
Gitlitz, Melvin H., 4,058,545, Cl. 260-429.700.
Kuahlefsky, Bernard G., 4,058,544, Cl. 260-429.700.
Mack, Gerry P. Organotin mercapto dicarboxylic acid esters and compositions. 4,058,543, Cl. 260-45.75S.
MacKay, Kenneth D.; and Rogier, Edgar R., to General Mills Chemicals, Inc. Solvent extraction of metals from acidic solutions with quaternary ammonium salts of hydrogen ion exchange agents. 4,058,585, Cl. 423-24.000.
Macovski, Albert, to Leland Stanford Junior University, The Board of Trustees of the. Ultrasonic electronic lens with reduced delay range. 4,058,003, Cl. 73-609.000.
Magarian, Masick C. Wrench for a substantially circular workpiece. 4,058,031, Cl. 81-64.000.
Mailfert, Alain; and Boyer, Lionel, to Agence Nationale de Valorisation de la Recherche (ANVAR). Rotary electrical machines having a superconducting field winding. 4,058,747, Cl. 310-52.000.
Mailliet, Pierre H.; and Metz, Jean, to S.A. des Anciens Etablissements Paul Wurth. Clay gun. 4,058,300, Cl. 266-273.000.
Maitland, Peter; and Draeger, William H., to Lear Siegler, Inc. Sound scrambling equipment. 4,058,677, Cl. 179-1.5FS.
Malasek, Jaromir: *See*—
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Malaviya, Shashi D., to International Business Machines Corporation. High performance analog to digital converter for integrated circuits. 4,058,808, Cl. 340-347.0AD.

Malec, Robert E., to Ethyl Corporation. Lubricant composition. 4,058,468, Cl. 252-46.700.

Mallaghan, Michael Lee: *See—*
O'Neill, Patrick; Douglas, Patrick Joseph; and Mallaghan, Michael Lee, 4,058,198, Cl. 198-313.000.

Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; and Gallagher, William J., to Battelle Memorial Institute. Producing X-rays. 4,058,486, Cl. 250-493.000.

Mammino, Joseph; and Jossel, Franklin, to Xerox Corporation. Yellow developer employing a coated carrier. 4,058,397, Cl. 96-15.00D.

Management Utilities, Inc.: *See—*
Kerns, Steven L., 4,057,922, Cl. 40-124.200.

Mancuso, Louis C. Carrying and insulating enclosure for pizza pie containers. 4,058,214, Cl. 206-545.000.

Manes, Milton. Recovery of activated carbon. 4,058,457, Cl. 210-32.000.

Mannesmann Aktiengesellschaft: *See—*
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Manney, Charles J.: *See—*
Schreyer, Kenneth D.; Rohosy, Soma M.; and Manney, Charles J., 4,058,291, Cl. 254-74.000.

Mansur, Dana L., Jr.; and Murphy, Thomas L., to Aerojet-General Corporation. Explosive device. 4,058,061, Cl. 102-8.000.

Marchbank, Ian, to Abel Morrall Limited. Framed embroidery assembly. 4,058,215, Cl. 206-574.000.

Marconi Company Limited, The: *See—*
Drewery, John Oliver; and Weston, Martin, 4,058,836, Cl. 358-167.000.

Markiewitz, Kenneth H.; and Restaino, Alfred J., to ICI United States Inc. Free radical polymerization process employing substituted amino acetic acid derivatives. 4,058,656, Cl. 526-215.000.

Markman, Stanley. Can folder and flattener. 4,058,054, Cl. 100-233.000.

Marlowe, Kenneth P., to Raymond Lee Organization Inc., a part interest. Reverse action weedless hook. 4,057,927, Cl. 43-43.600.

Marshall, Jeffrey D.; and Kuklies, Milton C., to Mobile Oil Corporation. Fire retardant laminates having intumescent adhesive layer comprising shellac. 4,058,643, Cl. 428-198.000.

Martan, Michael, to UOP Inc. Separation of isomers of phenols and phenolic ethers. 4,058,566, Cl. 260-600.00R.

Martig, Kenneth W., Jr., to Pro-Tech, Inc. Flow monitoring apparatus. 4,058,011, Cl. 73-194.00R.

Martin, Henry; Pissiotas, Georg; and Dittrich, Volker, to Ciba-Geigy AG. Use of oxime-ethers as a synergistically acting additive to insecticidally and/or acaricidally active substances. 4,058,604, Cl. 424-211.000.

Martin, Lincoln A.; and Fenley, William Franklin, Jr., to Geophysical Systems Corporation. Method and apparatus for processing seismic signals from low energy sources. 4,058,791, Cl. 340-15.5MC.

Martin Marietta Corporation: *See—*
Ray, James A., 4,058,407, Cl. 106-92.000.

Martin, Yvonne Connolly: *See—*
Jones, Peter Hadley; Bariana, Dilbagh Singh; Fung, Anthony Kei Lun; Martin, Yvonne Connolly; Kyncl, Jaroslav; and Lall, Amrit, 4,058,559, Cl. 260-520.00C.

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Masoero, Marcella: *See—*
Abbruzzese, Luigi; Gozzo, Franco; Rossi, Giorgio; Masoero, Marcella; Lorusso, Simone; Bonola, Paola; and Tamburin, Gino, 4,058,613, Cl. 424-258.000.

Mast, Aquila D., to Sperry Rand Corporation. Material layer diverting means for a crop material roll forming machine. 4,057,954, Cl. 56-341.000.

Matsui, Atsushi. Multipurpose disk protractor. 4,057,902, Cl. 33-1.00N.

Matsuo, Takashi: *See—*
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Matsuoka, Takashi, to Sumitomo Metal Industries, Ltd. Method of making cold-rolled high strength steel sheet. 4,058,414, Cl. 148-12.00F.

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Matsushita Electric Works, Ltd.: *See—*
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Matthews, Robert M.; and Lawson, William J., to Kellwood Company. Method of producing snag resistant hosiery article. 4,057,880, Cl. 28-154.000.

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Matusmoto, Goro: *See—*
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Maurer, Fritz: *See—*
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Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Hammann, Ingeborg; and Stendel, Wilhelm, 4,058,603, Cl. 424-200.000.

Mautz, Karl-Heinz: *See—*
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Maxfield, Maureen Adele. Full tank marker. 4,058,081, Cl. 116-125.000.

Maxon, Glenway W., III, to Maxon Industries, Inc. Concrete transporting and placing vehicle with laterally shiftable body. 4,058,343, Cl. 298-9.000.

Maxon Industries, Inc.: *See—*
Maxon, Glenway W., III, 4,058,343, Cl. 298-9.000.

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McArdle, James Michael Smith, to Domtar Limited. Produce tray. 4,058,248, Cl. 229-30.000.

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McCarthy, John Brian. Apparatus for playing a board game. 4,058,317, Cl. 273-130.00R.

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McGraw-Edison Company: *See—*
Gaia, Aldino J., 4,058,784, Cl. 337-164.000.
Gaia, Aldino J.; and Urani, Angelo, 4,058,786, Cl. 337-293.000.

McKee, Kevin D.: *See—*
Vogel, Ronald F.; Boldt, Robert R.; McKee, Kevin D.; Resh, Roy E.; and West, Paul E., 4,058,766, Cl. 324-61.00R.

McKee, Paul, deceased, to Enebrad, Lois. Filter for fish pond. 4,058,465, Cl. 210-356.000.

McKendry, Lennon H., to Dow Chemical Company, The. Substituted pyridine carboxylic acids and derivatives. 4,058,533, Cl. 260-294.80F.

McKinney, James T.; and Goff, Robert F., to Minnesota Mining and Manufacturing Company. Ion Scattering spectrometer with two analyzers preferably in tandem. 4,058,724, Cl. 250-309.000.

McLane, Larry A. Snake leggings. 4,057,853, Cl. 2-22.000.

McLaughlin, Michael H.: *See—*
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McLaughlin, Robert Joseph William, to University of Melbourne, The. Process for the beneficiation of titaniferous ores. 4,058,393, Cl. 75-1.00T.

McNair, Rhett, to Aqua Craft, Inc. Powerhead cartridge. 4,058,062, Cl. 102-38.000.

McNeil, Sharon S.; Bloomquist, Carl R.; and Johnston, Robert C., to Defiance - Azon Corporation. Photosensitive diazotype material and method of making the same. 4,058,399, Cl. 96-75.000.

McPherson, James Norman: *See—*
Andrews, Allen Howe; McPherson, James Norman; Burns, John Thomas, Jr.; and Hendrie, John Matthew, 4,058,788, Cl. 338-42.000.

Melilli, Albert Samuel: *See—*
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Melvold, Robert W.: *See—*
Vrolyk, John J.; and Melvold, Robert W., 4,058,234, Cl. 220-239.000.

Menand, Henri; and Mison, Andre, to Rhone-Poulenc S.A. Process for the copolymerization of acrylonitrile and sulphonate monomers. 4,058,509, Cl. 260-79.700.

Mendelsohn, Arnold: *See—*
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Menke, W. Kenneth, to Public Safety Equipment, Inc. Vehicle beacon control system. 4,058,794, Cl. 340-92.000.

Mentrup, Anton: *See—*
Renth, Ernst-Otto; Mentrup, Anton; Schromm, Kurt; and Walland, Alexander, 4,058,642, Cl. 424-330.000.

Menzel, John K.: *See—*
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Merck & Co., Inc.: *See—*
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Igoe, Robert S., 4,058,636, Cl. 426-573.000.
Jacobus, David P.; Dulaney, Eugene L.; and Grier, Nathaniel, 4,058,624, Cl. 424-330.000.
Jacobus, David P.; Dulaney, Eugene L.; and Grier, Nathaniel, 4,058,625, Cl. 424-325.000.
Saari, Walfred S., 4,058,530, Cl. 260-281.0GN.

Merz, Walter; and Schummer, Gunter, to Bayer Aktiengesellschaft. Treatment of waste water from the preparation of 6-substituted 3-mercapto-4-amino-1,2,4-triazine-5-ones. 4,058,526, Cl. 544-182.000.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Frommlet, Hubert; Mautz, Karl-Heinz; and Brunsch, Klaus, 4,058,353, Cl. 308-1.00A.

Metagraphic Systems, Inc.: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
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Metz, Jean: *See*—
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Metzger, Carl: *See*—
Thomas, Rudolf; Kramer, Wolfgang; Eue, Ludwig; Metzger, Carl; and Jager, Gerhard, 4,058,392, Cl. 71-106.000.
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Meyer, Fred H., to Picker Corporation. Radiation imaging apparatus and method. 4,058,833, Cl. 358-111.000.
Meyer, Hans-Rudolf, to Ciba-Geigy Corporation. Bis-benzoxazolylnaphthalenes as optical brighteners. 4,058,408, Cl. 106-176.000.
Meyer, Martin R.: *See*—
Hochradel, Ernest; Hauer, Werner; Meyer, Martin R.; and Reuter, Frederick A., 4,058,274, Cl. 243-5.000.
Meyer, Rudolf; Schiegl, Wolf-Eberhard; and Taumann, Leonhard, to Siemens Aktiengesellschaft. Irradiating device with an electronic accelerator. 4,058,730, Cl. 250-397.000.
Meyers, Frank. Contaminating spill detection arrangement. 4,058,802, Cl. 340-224.000.
Michal, Dorothy Hamilton. Jewelry box. 4,058,356, Cl. 312-305.000.
Micro Magnetic Industries, Inc.: *See*—
Riddle, John B.; and Bogert, Howard Z., Jr., 4,058,194, Cl. 194-4.00C.
Microwave Development Labs., Inc.: *See*—
Riblet, Gordon, 4,058,780, Cl. 333-1.100.
Midcon Pipeline Equipment Co.: *See*—
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Midland-Ross Corporation: *See*—
Duska, Joseph J.; and McGill, Paul E., 4,058,298, Cl. 366-76.000.
Miettinen, Seppo I., to United States of America, Commerce. Bowling ball including a means for displacing the center of gravity. 4,058,310, Cl. 273-63.00E.
Mieville, Andre, to Orchimed SA. Esters of p-carbonylphenoxy-isobutyric acids. 4,058,552, Cl. 560-52.000.
Milan, Otto G.; and Klich, Edward J., to Addressograph-Multigraph Corporation. Moisture metering control apparatus. 4,058,057, Cl. 101-148.000.
Milkovic, Miran, to General Electric Company. Two-way electronic kWh meter. 4,058,768, Cl. 324-142.000.
Miller, Anthony J., to Seeburg Corporation, The. Electronic control and test circuit for pinball type games. 4,058,316, Cl. 273-121.00A.
Miller, David K.: *See*—
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Miller, Michael E., to Sam Stein Associates, Inc. Rear batter flow for batter applicator machines. 4,058,083, Cl. 118-16.000.
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Mims, Samuel S., to El Paso Products Company. Process for the purification of mixed acids. 4,058,555, Cl. 560-191.000.
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Yonezu, Nobuya, 4,058,151, Cl. 144-246.00E.
Minemoto, Isamu: *See*—
Morisawa, Kunio; Minemoto, Isamu; and Kyushima, Tatsuo, 4,058,193, Cl. 192-109.00F.
Miner, Thomas Gary: *See*—
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Minnesota Mining and Manufacturing Company: *See*—
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McKinney, James T.; and Goff, Robert F., 4,058,724, Cl. 250-309.000.
Nora, James C., 4,058,593, Cl. 424-1.
Sinclair, Robert A., 4,058,362, Cl. 21-2.50R.
Miquel, Jean: *See*—
Le Page, Jean-Francois; Juguin, Bernard; and Miquel, Jean, 4,058,450, Cl. 208-66.000.
Mirliss, Melvin J.; and Nielsen, Richard B., to Grefco, Inc. Method and apparatus for drying damp powder. 4,057,908, Cl. 34-10.000.
Mislin, Roland; and Uehlinger, Hanspeter, to Sandoz Ltd. Sulfo group-containing azo compounds having a tetrazo component radical derived from an optionally substituted 3,8-diaminodibenzofuran. 4,058,516, Cl. 260-152.000.
Mison, Andre: *See*—
Menand, Henri; and Mison, Andre, 4,058,509, Cl. 260-79.700.
Mitch, Frank A., to SCM Corporation. Disinfectant composition comprising pinanol. 4,058,628, Cl. 424-343.000.
Mitchell, Roger; and Strater, William H., to Visual Graphics Corporation. Camera accessory and cartridge. 4,058,823, Cl. 354-354.000.
Mitchell, William J. Tool case. 4,058,210, Cl. 206-372.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Shibayama, Kyoichi; Satho, Fumihiko; and Naitho, Mamoru, 4,058,444, Cl. 204-181.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Ko, Keiun; Takashina, Naomitsu; Shimizu, Senzo; Ikegami, Masuya; and Iwamoto, Yoshinori, 4,058,497, Cl. 260-22.00A.
Yonemitsu, Eiichi; Sugio, Akitoshi; Kuramoto, Atuo; and Urabe, Hiroyuki, 4,058,504, Cl. 260-47.0ET.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Inoue, Takayuki; Kakizaki, Tetsuji; and Ochiumi, Masahide, 4,058,647, Cl. 428-474.000.
Mitsubishi Precision Co., Ltd.: *See*—
Futai, Norio; Murakami, Toshio; Takahara, Yoshimasa; and Kumazawa, Toshiharu, 4,058,481, Cl. 252-321.000.
Mitsui, Norihiko: *See*—
Okubo, Isao; Ito, Takayoshi; and Mitsui, Norihiko, 4,057,934, Cl. 49-28.000.
Mitsuishi, Etsuko: *See*—
Hata, Shun-ichi; Mizuno, Koji; Nishii, Yasuho; Mitsuishi, Etsuko; and Shiba, Motoharu, 4,058,601, Cl. 424-180.000.
Miyao, Hiroyasu: *See*—
Sekiguchi, Tomoaki; Miyao, Hiroyasu; and Shimizu, Hidekazu, 4,058,797, Cl. 340-56.000.
Miyaoka, Senri, to Sony Corporation. System for making a light beam scan a flat carrier with autofocusing. 4,058,834, Cl. 358-128.000.
Miyata, Yukinori: *See*—
Taira, Kaoru; Sato, Teruo; Ishii, Yoshiya; Miyata, Yukinori; and Okamoto, Katashi, 4,058,101, Cl. 123-140.0MP.
Miyazawa, Kuichiro: *See*—
Komatsu, Atsushi; Miyazawa, Kuichiro; Yamaura, Yoshotomo; and Asanuma, Akira, 4,058,134, Cl. 137-38.000.
Miyoshi, Tadahiko; Kurihara, Yasutoshi; Kamei, Tatsuya; and Ogawa, Takuzo, to Hitachi, Ltd. Photo-coupler semiconductor device and method of manufacturing the same. 4,058,821, Cl. 357-19.000.
Mizuno, Koji: *See*—
Hata, Shun-ichi; Mizuno, Koji; Nishii, Yasuho; Mitsuishi, Etsuko; and Shiba, Motoharu, 4,058,601, Cl. 424-180.000.
Mizutani, Toshio: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,058,622, Cl. 424-308.000.
Mizutani, Yasukazu: *See*—
Ubukata, Susumu; Mizutani, Yasukazu; Iyoda, Syozo; and Aoi, Hiroshi, 4,058,271, Cl. 242-107.40B.
Mobil Oil Corporation: *See*—
Chang, Clarence D.; and Grover, Shamsher S., 4,058,576, Cl. 260-673.000.
Florian, John, 4,058,247, Cl. 229-2.50R.
Steiner, Robert Henry, 4,058,645, Cl. 428-331.000.
Steiner, Robert Henry, 4,058,649, Cl. 428-518.000.
Mobile Oil Corporation: *See*—
Marshall, Jeffrey D.; and Kuklies, Milton C., 4,058,643, Cl. 428-198.000.
Mochizuki, Hiroshi: *See*—
Tanaka, Eizi; and Mochizuki, Hiroshi, 4,058,100, Cl. 123-139.0AW.
Moestue, Hans Jacob. Mechanism for cleaning a cylinder of a printing press. 4,058,059, Cl. 101-425.000.
Mogi, Takao; Taki, Akira; and Yamazaki, Hiroshi, to Sony Corporation. Method of and apparatus for converting a plural-bit digital signal to a pulse width modulated signal. 4,058,772, Cl. 325-464.000.
Mole, Cecil J.; and Edwards, Robert F., to Westinghouse Electric Corporation. Dynamoelectric machinery utilizing superconductive windings. 4,058,746, Cl. 310-10.000.
Monkovic, Ivo; Bachand, Carol; and Wong, Henry, to Bristol-Myers Company. Process for the preparation of 14-hydroxymorphinan derivatives. 4,058,531, Cl. 260-285.000.
Monnig, Anthony B.: *See*—
Paptzun, George J.; and Monnig, Anthony B., 4,057,883, Cl. 29-157.10R.
Monsanto Company: *See*—
Morgan, Albert W.; Shull, Charles S.; and Vanderlinde, William, 4,058,658, Cl. 526-261.000.
Olive, Gisela; and Olive, Salvador, 4,058,548, Cl. 260-465.100.
Montedison S.p.A.: *See*—
Abbruzzese, Luigi; Gozzo, Franco; Rossi, Giorgio; Masoero, Marcella; Lorusso, Simone; Bonola, Paola; and Tamburin, Gino, 4,058,613, Cl. 424-258.000.
Glatti, Flaviano; and Siongo, Gastone, 4,058,471, Cl. 252-63.500.
Mooradian, Albert H.: *See*—
Paterson, Malcolm M.; DiMercurio, John S.; and Mooradian, Albert H., 4,057,909, Cl. 34-76.000.
Moore, Franklin Eldridge. Speed control device. 4,058,094, Cl. 123-102.000.
Moran, Thomas J., to United States of America, Air Force. Dispersive electromagnetic surface acoustic wave transducer. 4,058,002, Cl. 73-620.000.
Moreaux, Claude, to Societe Anonyme Intersmat. Chromatograph, more particularly for gas phase chromatography. 4,057,998, Cl. 73-23.100.
Morfitt, John B., to Lantec Industries, Ltd. Small, variable-speed yarder. 4,058,295, Cl. 254-184.000.
Morgan, Albert W.; Shull, Charles S.; and Vanderlinde, William, to Monsanto Company. Copolymers of ω-bromoalkyl esters of acyclic unsaturated dicarboxylic acids. 4,058,658, Cl. 526-261.000.
Morgan, Steven J. Lock for skis. 4,057,983, Cl. 70-18.000.
Mori, Michitsugu: *See*—
Kohno, Takashige; Takamaru, Takeshi; Kuwahara, Akiyasu; and Mori, Michitsugu, 4,058,093, Cl. 123-75.00B.
Mori, Takashi; Takaku, Sakae; Oi, Nobuhiro; Shindo, Minoru; Hirano, Takeaki; Kataoka, Shigeyuki; and Furuno, Kouji, to Chugai Seiyaku Kabushiki Kaisha. Bis(benzamido)-benzene derivatives. 4,058,523, Cl. 544-165.000.
Morisawa, Kunio; Minemoto, Isamu; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control device for use in an automatic transmission. 4,058,193, Cl. 192-109.00F.
Morner, Bengt Olof Johan Stellan: *See*—
Nagy, Gyorgy; and Morner, Bengt Olof Johan Stellan, 4,057,900, Cl. 30-382.000.
Morozowich, Walter, to Upjohn Company, The. Substituted phenyl esters of PGA2. 4,058,551, Cl. 560-43.000.

Morris, Donald Blanton: *See*—
Fuller, Robert R.; and Morris, Donald Blanton, 4,058,433, Cl. 162-16.000.
Morse, Hugh B.; and Johnson, Robert B., to Helmut E. W. Masch. Display carton and blank therefor. 4,058,206, Cl. 206-44.00R.
Morton, Dale E., to Texas Instruments Incorporated. Method of optical thin film coating. 4,058,638, Cl. 427-39.000.
Moschovis, Elia P.; and Gilson, John L., to A. B. Dick Company. Liquid developer composition for lithographic masters. 4,058,470, Cl. 252-62.10L.
Mostow, Arthur L. Selectively operated, clock-controlled repetitive calculator. 4,058,714, Cl. 364-754.000.
Motorola, Inc.: *See*—
Dano, Arnold Vincent; Tomaszewski, Jerry James; and Friedrichs, Jerome Peter, 4,058,744, Cl. 310-343.000.
Gauss, Robert C.; and Wills, Lynn D., 4,058,811, Cl. 343-715.000.
Motz, Herbert: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Hartmann, Hans-Joerg; Spoor, Herbert; Uhl, Karl; Lehner, August; Gutermann, Winfried; and Motz, Herbert, 4,058,646, Cl. 428-425.000.
Mourlevat, Jean: *See*—
de Saint Palais, Jacques; Laffont, Paul; and Mourlevat, Jean, 4,058,137, Cl. 137-236.00S.
Mouzin, Gilbert: *See*—
Cousse, Henri; Mouzin, Gilbert; and Rieu, Jean-Pierre, 4,058,558, Cl. 260-515.00A.
MSI Data Corporation: *See*—
Sherer, Paul; and Hester, Gerald Paul, 4,058,708, Cl. 235-92.0CC.
Muehldorf, Eugen I.; and Elam, Robert R., to International Business Machines Corporation. Apparatus and process for testing AC performance of LSI components. 4,058,767, Cl. 324-73.00R.
Mueller, Karl Friedrich, to Ciba-Geigy Corporation. Esters of anhydride aromatic polycarboxylic acids with perfluoroalkyl alcohols. 4,058,537, Cl. 260-346.300.
Mulder, Jan, to U.S. Philips Corporation. Hot-gas reciprocating machine with self-centered free piston. 4,058,382, Cl. 62-6.000.
Muller, Karl-Heinz; Munchmeyer, Walter; von Rauch, Moriz; and Schafer, Norbert, to Siemens Aktiengesellschaft. Specimen holder for a corpuscular-beam apparatus. 4,058,731, Cl. 250-442.000.
Mullis, Clyde M., to Westinghouse Electric Corporation. Elevator system with retainer device for plurality of traveling cables. 4,058,186, Cl. 187-1.00R.
Munch, Walter, Jr.: *See*—
Wade, David R.; and Munch, Walter, Jr., 4,058,042, Cl. 84-1.010.
Munchmeyer, Walter: *See*—
Muller, Karl-Heinz; Munchmeyer, Walter; von Rauch, Moriz; and Schafer, Norbert, 4,058,731, Cl. 250-442.000.
Munk, Michael E.; and Bromberg, Louis F., to Munk, Michael E. Method and apparatus for conservation of energy and containment and evacuation of smoke in a high rise building. 4,058,253, Cl. 236-46.00R.
Muntz, Earl W. Projection television receiver. 4,058,837, Cl. 358-237.000.
Murai, Hisanori: *See*—
Omoto, Yorihiko; Konishi, Tadashi; Ichihara, Shigehiro; and Murai, Hisanori, 4,058,507, Cl. 260-75.00M.
Murakami, Kazuo, to Nippon Gakki Seizo Kabushiki Kaisha. Electrical musical instrument. 4,058,044, Cl. 84-1.140.
Murakami, Masuo: *See*—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, 4,058,665, Cl. 560-121.000.
Murakami, Toshio: *See*—
Futai, Norio; Murakami, Toshio; Takahara, Yoshimasa; and Kumazawa, Toshiharu, 4,058,481, Cl. 252-321.000.
Murata, Masataka; Takeda, Keiji; and Ikeda, Teppei, to Fuji Photo Film Co., Ltd. Recording material. 4,058,443, Cl. 204-159.170.
Murata, Masataka: *See*—
Osada, Chiaki; Hasegawa, Eiichi; and Murata, Masataka, 4,058,398, Cl. 96-27.00R.
Murphy, Bernard J., to Fiat-Allis Construction Machinery, Inc. Master link assembly having two-piece links. 4,058,351, Cl. 305-54.000.
Murphy, Kevin P.; Stahl, Richard F.; and Orfeo, Sabatino R., to Allied Chemical Corporation. Constant boiling mixtures of 1-chloro-2,2,2-trifluoroethane and 2-chloroheptafluoropropane. 4,057,973, Cl. 62-114.000.
Murphy, Kevin P.; Stahl, Richard F.; and Orfeo, Sabatino R., to Allied Chemical Corporation. Constant boiling mixtures of 1-chloro-2,2,2-trifluoroethane and octafluorocyclobutane. 4,057,974, Cl. 62-114.000.
Murphy, Thomas L.: *See*—
Mansur, Dana L., Jr.; and Murphy, Thomas L., 4,058,061, Cl. 102-8.000.
Murtaugh, Justin J.: *See*—
Keyes, George B.; and Murtaugh, Justin J., 4,058,474, Cl. 252-160.000.
Mussgay, Manfred: *See*—
Bauer, Kurt; Wittman, Gunther; Mussgay, Manfred; Irion, Eckart; and Geilhausen, Horst, 4,058,599, Cl. 424-92.000.
Musumeci, Luigi: *See*—
Delle Donne, Roberto; and Musumeci, Luigi, 4,058,682, Cl. 179-15.0AF.
Mutsuta, Akio: *See*—
Sato, Yoshimasa; Tsukuda, Toshio; Inoue, Hajime; and Mutsuta, Akio, 4,057,978, Cl. 62-331.000.
Muzhzhavlev, Konstantin Dmitrievich; Kosarev, Sergei Petrovich; Schegolev, Vladimir Ivanovich; Ivanov, Andrei Borisovich; Romanenko, Oleg Nikolaevich; Yazev, Vladimir Dmitrievich; and Vasiliev, Alexei Vasilievich. Diaphragmless electrolyzer for producing magnesium and chlorine. 4,058,448, Cl. 204-244.000.
Naarmann, Herbert; and Pohlemann, Heinz, to BASF Aktiengesellschaft. Polymers containing urethane groups. 4,058,508, Cl. 260-77.5BB.
Nachtigal, Julius Harvey, to Colgate-Palmolive Company. Stabilized toothpastes containing an enzyme. 4,058,596, Cl. 424-50.000.
Nadler, Morton. Analog/digital converter. 4,058,806, Cl. 340-347.0AD.
Nagami, Masaru: *See*—
Kishi, Yoshio; and Nagami, Masaru, 4,058,841, Cl. 360-27.000.
Nagata, Wataru: *See*—
Uyeo, Shoichiro; Aoki, Tsutomu; and Nagata, Wataru, 4,058,521, Cl. 260-239.100.
Nagel, Artur; and Wissaert, Roland, to Siemens Aktiengesellschaft. Apparatus for direct line switching. 4,058,684, Cl. 179-18.0BB.
Naglieri, Anthony N.: *See*—
Rizkalla, Nabil; and Naglieri, Anthony N., 4,058,542, Cl. 260-429.00R.
Nagy, Gyorgy; and Morner, Bengt Olof Johan Stellan, to AB Partner. Power saw. 4,057,900, Cl. 30-382.000.
Nagy, Robert Andrew. Longitudinally extended printing method for computers. 4,058,798, Cl. 364-900.000.
Naitho, Mamoru: *See*—
Shibayama, Kyoichi; Satho, Fumihiko; and Naitho, Mamoru, 4,058,444, Cl. 204-181.000.
Nakai, Masanori: *See*—
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,058,419, Cl. 148-175.000.
Nakajima, Sachie: *See*—
Idzutsu, Waichiro; Kuroki, Masaaki; Komukai, Shigeru; Terasaki, Daijiro; and Nakajima, Sachie, 4,058,376, Cl. 55-70.000.
Nakamura, Junichi: *See*—
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,058,419, Cl. 148-175.000.
Nakamura, Yoshihiro, to Riken Keikinzoku Kogyo Kabushiki Kaisha. Window sash assembly. 4,057,937, Cl. 49-372.000.
Nakanishi, Hajime: *See*—
Kawashima, Kohei; Ikeno, Keiji; and Nakanishi, Hajime, 4,058,264, Cl. 242-18.0PW.
Nalco Chemical Company: *See*—
Svarz, Jerry J., 4,058,458, Cl. 210-52.000.
National Polymers, Inc.: *See*—
Stutelberg, Kenneth R.; and Anderson, Dennis C., 4,057,931, Cl. 47-66.000.
National Research Development Corporation: *See*—
Firth, Jack Graham; Jones, Thomas Alwyn; and Rimmington, Brenda, 4,057,996, Cl. 73-23.000.
Hurt, Francis Neil; Theaker, Reginald; and Plant, David Herbert, 4,058,245, Cl. 226-174.000.
Neles Oy: *See*—
Nelimarkka, Juha Antti Elia, 4,058,290, Cl. 251-306.000.
Nelimarkka, Juha Antti Elia, to Neles Oy. Gate valve. 4,058,290, Cl. 251-306.000.
Nelson, Ernest William. Process for removing impurities from acidic fluid solutions. 4,058,587, Cl. 423-220.000.
Ness, Irving S., to Johnson & Johnson. Force distributing adhesive tape tab for disposable diapers. 4,058,125, Cl. 128-287.000.
Neustadt, Bernard R., to Schering Corporation. 6-(Polyhaloisopropyl)-quinazoline-2,4-diones. 4,058,612, Cl. 424-251.000.
Nickerson, Harvey R.; Rink, Helm A.; and Menzel, John K., to Resistoflex Corporation. Heat-responsively self-sealing protective jacket for expansion joints. 4,058,328, Cl. 285-45.000.
Nicklaus, Karl, to Esec Sales S.A. Suction pipette and method of manufacture for receiving of semiconductor crystal plates. 4,058,246, Cl. 228-121.000.
Nickles, Robert J., to Wisconsin Alumni Research Foundation. Correction of data loss in gamma ray scintillation cameras. 4,058,728, Cl. 250-369.000.
Nielsen, Richard B.: *See*—
Mirliss, Melvin J.; and Nielsen, Richard B., 4,057,908, Cl. 34-10.000.
Nieman, Gerald R.: *See*—
Panek, George J.; Ingham, Francis H.; Sedig, Albert R.; and Nieman, Gerald R., 4,058,671, Cl. 174-151.000.
Nihon Hammond Kabushiki Kaisha: *See*—
Shibahara, Masashi, 4,058,043, Cl. 84-1.030.
Nippon Electric Company, Ltd.: *See*—
Niwa, Kunihiko, 4,058,715, Cl. 364-726.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Murakami, Kazuo, 4,058,044, Cl. 84-1.140.
Nippon Soken, Inc.: *See*—
Oishi, Kazuo; Yamada, Takashi; and Yoshida Shuzo, 4,058,796, Cl. 340-52.00F.
Tanaka, Eizi; and Mochizuki, Hiroshi, 4,058,100, Cl. 123-139.0AW.
Nippon Steel Corporation: *See*—
Takechi, Hiroshi; Abe, Mitsunobu; Katsutani, Ryoseki; and Saito, Yoshio, 4,057,989, Cl. 72-128.000.
Nippondenso Co., Ltd.: *See*—
Taira, Kaoru; Sato, Teruo; Ishii, Yoshiya; Miyata, Yukinori; and Okamoto, Katashi, 4,058,101, Cl. 123-140.0MP.

Nishi, Yoshio: *See*—
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,058,419, Cl. 148-175.000.
Nishida, Yoshihiko: *See*—
Imaizumi, Yoshihiro; and Nishida, Yoshihiko, 4,058,681, Cl. 179-15.0AL.
Nishii, Yasuho: *See*—
Hata, Shun-ichi; Mizuno, Koji; Nishii, Yasuho; Mitsuishi, Etsuko; and Shiba, Motoharu, 4,058,601, Cl. 424-180.000.
Nishikawa, Kohji: *See*—
Kawaguchi, Hiroshi; and Nishikawa, Kohji, 4,058,084, Cl. 188-71.800.
Nishimura, Yasutake; and Hasegawa, Mitsuhiro, to Matsushita Electric Industrial Co., Ltd. Headphone. 4,058,688, Cl. 179-156.00R.
Niwa, Kunihiko, to Nippon Electric Company, Ltd. Serial FFT processing unit. 4,058,715, Cl. 364-726.000.
Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera exposure control system having digitally controlled timing circuitry including a decimal count storing memory. 4,058,816, Cl. 354-23.00D.
Nofziger, Neil B., to Owens-Illinois, Inc. Simultaneously baking and sealing a faceplate assembly. 4,058,387, Cl. 65-32.000.
Noirel, Yves Maurice: *See*—
Guinet, Yves Maurice; and Noirel, Yves Maurice, 4,058,830, Cl. 358-86.000.
Nora, James C., to Minnesota Mining and Manufacturing Company. Technetium-labeled bone scanning agents. 4,058,593, Cl. 424-1.
Nordisk Kartro Aktiebolag: *See*—
Sundberg, Borje Erling Ingvar, 4,058,048, Cl. 85-31.000.
Noritsa, Nadezhda Petrovna: *See*—
Ovchinnikov, Viktor Georgievich; Noritsa, Nadezhda Petrovna; Grib, Maria Mefodievna; Kamennov, Nikolai Alexandrovich; and Skvortsova, Elena Konstantinovna, 4,058,618, Cl. 424-273.00R.
North Electric Company: *See*—
Bowin, William Ferdinand, 4,058,685, Cl. 179-18.0AH.
Norwich Laboratory, Inc.: *See*—
Edwards, Harrison F., 4,058,107, Cl. 126-121.000.
Novikov, Igor Ivanovich: *See*—
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.
Nudenberg, Walter: *See*—
Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., 4,058,568, Cl. 260-607.0AR.
Nuova San Giorgio S.p.A.: *See*—
Roehrich, Christian, 4,057,955, Cl. 57-56.000.
Nurmse, Karl. Line protecting elements for use in fishing reels. 4,058,269, Cl. 242-84.10K.
Nutt, Wendell Glenn; and Webster, George Harry, to Bell Telephone Laboratories, Incorporated. Transmission path between nearby telephone central offices. 4,058,669, Cl. 174-34.000.
O & K Orenstein & Koppel Aktiengesellschaft: *See*—
Kranefeld, Wilhelm; and Schneider, Helmut, 4,057,942, Cl. 52-115.000.
Obara, Sanshiro: *See*—
Honbu, Mitsuyuki; Obara, Sanshiro; and Hori, Takamasa, 4,058,755, Cl. 318-47.000.
Oberschachtsiek, Gerd: *See*—
Baing, Helmut; Oberschachtsiek, Gerd; Grenzing, Horst; and Meurer, Peter, 4,058,069, Cl. 110-8.00F.
O'Brien, William Joseph, to Decca Record Company Ltd. Radio frequency pulse transmitters. 4,058,742, Cl. 307-260.000.
Oce-van der Grinten N.V.: *See*—
Urselmann, Godefridus H., 4,058,359, Cl. 355-109.000.
Ochiumi, Masahide: *See*—
Inoue, Takayuki; Kakizaki, Tetsuji; and Ochiumi, Masahide, 4,058,647, Cl. 428-474.000.
Oeffinger, Thomas R.: *See*—
George, Peter K.; and Oeffinger, Thomas R., 4,058,799, Cl. 340-174.0TF.
Ogawa, Iwakichi, to Takara Co., Ltd. Mobile reconfigurable spherical toy. 4,057,929, Cl. 46-201.000.
Ogawa, Takuzo: *See*—
Miyoshi, Tadahiko; Kurihara, Yasutoshi; Kamei, Tatsuya; and Ogawa, Takuzo, 4,058,821, Cl. 357-19.000.
Ogita, Hiroshi: *See*—
Suzuki, Takao; and Ogita, Hiroshi, 4,058,090, Cl. 123-32.0SP.
Ohashi, Takashi: *See*—
Yukuta, Toshio; Ohashi, Takashi; Saito, Masumi; and Arai, Katsuhiko, 4,058,503, Cl. 260-47.0CP.
Ohhinata, Ichiro: *See*—
Tokunaga, Michio; Ohhinata, Ichiro; and Okuhara, Shinzi, 4,058,741, Cl. 307-252.00G.
Ohlson, John Leonard: *See*—
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, 4,058,527, Cl. 260-251.00R.
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, 4,058,528, Cl. 260-251.00R.
Ohnishi, Toshinobu; Sumiya, Hiroyuki; and Suzuki, Masao, to Sony Corporation. Malfunction indication apparatus for use in a CRT deflection circuit. 4,058,754, Cl. 315-411.000.
Ohno, Genji, to Research and Development Laboratories of Ohno Co., Ltd. Electrostatic developing method. 4,058,637, Cl. 427-15.000.
Ohno, Isao: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,058,622, Cl. 424-308.000.
Ohno, Nobuo: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,058,622, Cl. 424-308.000.
Ohno, Tetsuo; and Watanabe, Shoji, to Iko Trading Co., Ltd. Safety cap. 4,058,232, Cl. 215-217.000.
Ohsawa, Mitsuo; and Yamatani, Wataru, to Sony Corporation. Double-balanced frequency converter. 4,058,771, Cl. 325-446.000.
Oi, Nobuhiro: *See*—
Mori, Takashi; Takaku, Sakae; Oi, Nobuhiro; Shindo, Minoru; Hirano, Takeaki; Kataoka, Shigeyuki; and Furuno, Kouji, 4,058,523, Cl. 544-165.000.
Oide, Kunimasa. Joining and fixing structure for ceiling boards and panelling. 4,057,947, Cl. 52-496.000.
Oishi, Kazuo; Yamada, Takashi; and Yoshida Shuzo, to Nippon Soken, Inc. System for providing a driving person with helpful information for driving a vehicle. 4,058,796, Cl. 340-52.00F.
Okamoto, Katashi: *See*—
Taira, Kaoru; Sato, Teruo; Ishii, Yoshiya; Miyata, Yukinori; and Okamoto, Katashi, 4,058,101, Cl. 123-140.0MP.
Okubo, Isao; Ito, Takayoshi; and Mitsui, Norihiko, to Hitachi, Ltd. Protection system for automatically openable and closable door. 4,057,934, Cl. 49-28.000.
Okuhara, Shinzi: *See*—
Tokunaga, Michio; Ohhinata, Ichiro; and Okuhara, Shinzi, 4,058,741, Cl. 307-252.00G.
Okuno, Yoshitoshi: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,058,622, Cl. 424-308.000.
Olin Corporation: *See*—
Knollmueller, Karl O., 4,058,546, Cl. 260-448.80R.
Olive, Gisela; and Olive, Salvador, to Monsanto Company. Process for preparing acetonitrile. 4,058,548, Cl. 260-465.100.
Olive, Salvador: *See*—
Olive, Gisela; and Olive, Salvador, 4,058,548, Cl. 260-465.100.
Omoto, Yorihiko; Konishi, Tadashi; Ichihara, Shigehiro; and Murai, Hisanori, to Teijin Limited. Process for preparing polyesters. 4,058,507, Cl. 260-75.00M.
Onaka, Hidemi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control system for use in exhaust gas recirculation system. 4,058,098, Cl. 123-119.00A.
Ondercin, Robert Michael; and Borzcik, Paul Stephen, to Cincinnati Milacron Inc. Asynchronous dual function multiprocessor machine control. 4,058,711, Cl. 364-101.000.
O'Neill, Patrick; Douglas, Patrick Joseph; and Mallaghan, Michael Lee, to Powerscreen International Limited. Conveyor assembly. 4,058,198, Cl. 198-313.000.
Oosawa, Kenji: *See*—
Tamura, Toshio; Oouchi, Shigeo; Oosawa, Kenji; and Fueki, Shimetomo, 4,058,439, Cl. 204-49.000.
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Opti Patent-, Forschungs- und Fabrikations AG: *See*—
Frohlich, Alfons; Dahlmann, Julius; and Volter, Gunter, 4,058,145, Cl. 139-384.00B.
Orbitran Company, Inc.: *See*—
Price, Robert John, 4,058,179, Cl. 177-156.000.
Orchimed SA: *See*—
Mieville, Andre, 4,058,552, Cl. 560-52.000.
Orfeo, Sabatino R.: *See*—
Murphy, Kevin P.; Stahl, Richard F.; and Orfeo, Sabatino R., 4,057,973, Cl. 62-114.000.
Murphy, Kevin P.; Stahl, Richard F.; and Orfeo, Sabatino R., 4,057,974, Cl. 62-114.000.
Orlando, Charles M.: *See*—
Kinson, Philip L.; and Orlando, Charles M., 4,058,570, Cl. 260-620.000.
Orlowski, Jan A.: *See*—
Lee, Henry L., Jr.; Orlowski, Jan A.; and Fromm, Carl H., 4,058,442, Cl. 204-159.120.
Oroshnik, William, to SCM Corporation. Synthesis of Vitamin A, intermediates and conversion thereof to Vitamin A. 4,058,569, Cl. 260-617.00A.
Osada, Chiaki; Hasegawa, Eiichi; and Murata, Masataka, to Fuji Photo Film Co., Ltd. Image recording material and method for forming an image using the same. 4,058,398, Cl. 96-27.00R.
Ostendorf, Edward M., to United States of America, Air Force. Staked bearing cutter. 4,057,899, Cl. 30-296.00R.
Osterholtz, Frederick D.: *See*—
Yen, Steven N.; and Osterholtz, Frederick D., 4,058,124, Cl. 128-284.000.
Otis Engineering Corporation: *See*—
Crickmer, Charles D., 4,058,166, Cl. 166-315.000.
Otto, Oberdan W., to Hughes Aircraft Company. Controlled gap surface acoustic wave device. 4,058,745, Cl. 310-366.000.
Ovalstrapping, Inc.: *See*—
Pasic, James A.; and Berg, Marvin I., 4,058,426, Cl. 156-212.000.
Ovchinnikov, Viktor Georgievich; Noritsa, Nadezhda Petrovna; Grib,

Maria Mefodievna; Kamennov, Nikolai Alexandrovich; and Skvortsova, Elena Konstantinovna. Certain hydantoin containing bactericides which are resistant to self-heating. 4,058,618, Cl. 424-273.00R.
Owens-Corning Fiberglas Corporation: *See*—
Kleist, Dale, 4,058,385, Cl. 65-2.000.
Owens-Illinois, Inc.: *See*—
Nofziger, Neil B., 4,058,387, Cl. 65-32.000.
Young, Chung Chang, 4,058,437, Cl. 204-1.00T.
Oxendine, Ozmer Lee. Orthopedic boots. 4,057,914, Cl. 36-81.000.
Ozerov, Valery Ilich: *See*—
Prutkovsky, Evgeny Nikolaevich; Bermatov, Mikhail Albertovich; Tarasov, Evgeny Alexandrovich; Ozerov, Valery Ilich; Fedosjuk, Alexandr Fedorovich; and Krokhin, Vladimir Andreevich, 4,057,966, Cl. 60-678.000.
Paganessi, Gian Pietro: *See*—
Piccolo, Luigi; Ghirga, Marcello; Paolinelli, Antonio; and Paganessi, Gian Pietro, 4,058,389, Cl. 71-31.000.
Palka, James J., to General Bathroom Products Corporation. Soffit lighting. 4,058,718, Cl. 362-235.000.
Palo Alto Research Associates: *See*—
Kaspari, William J.; Wong, Herman; and Kirch, Joseph L., 4,058,117, Cl. 128-2.05A.
Palomo Coll, Antonio Luis. Process for the conversion of 6-aminopenicillanic acid (6-APA) in 7-aminodesacetoxycephalosporanic acid (7-ADCA). 4,058,660, Cl. 544-18.000.
Palumbo, John A.: *See*—
Kelsey, Amos P.; Palumbo, John A.; and Thiel, James L., 4,057,990, Cl. 72-166.000.
Panek, George J.; Ingham, Francis H.; Sedig, Albert R.; and Nieman, Gerald R., to International Telephone and Telegraph Corporation. Electrical penetration assembly. 4,058,671, Cl. 174-151.000.
Paolinelli, Antonio: *See*—
Piccolo, Luigi; Ghirga, Marcello; Paolinelli, Antonio; and Paganessi, Gian Pietro, 4,058,389, Cl. 71-31.000.
Paptzun, George J.; and Monnig, Anthony B., to Lunkenheimer Company, The. Method of assembling rotary ball valve. 4,057,883, Cl. 29-157.10R.
Park, Im K., to Exxon Research & Engineering Co. Method of making thermoplastic resin composite. 4,058,581, Cl. 264-136.000.
Parke, Davis & Company: *See*—
Tinney, Francis John, 4,058,513, Cl. 260-112.5LH.
Parkinson, Sydney. Devices for picking up balls. 4,058,336, Cl. 294-19.00A.
Paschedag, Hansjoachim; and Keller, Hansjurg, to Cerberus AG, Switzerland. Radiation detector. 4,058,726, Cl. 250-353.000.
Pashley, Richard D.: *See*—
Welch, Bryant M.; and Pashley, Richard D., 4,058,413, Cl. 148-1.500.
Pasic, James A.; and Berg, Marvin I., to Ovalstrapping, Inc. Method and apparatus for wrapping objects with a sealable wrap. 4,058,426, Cl. 156-212.000.
Passedouet, Andre Henri; and Pipon, Robert, to Rhone-Poulenc Industries. Aluminium salts of betaine chloride and compositions containing the same. 4,058,597, Cl. 424-68.000.
Patel, Mahendra S.; and Sacuta, Aleksy, to Texaco Exploration Canada Ltd. Demulsification of oil emulsions with a mixture of polymers and alkaline earth metal halide. 4,058,453, Cl. 208-188.000.
Paterson, Malcolm M.; DiMercurio, John S.; and Mooradian, Albert H., to Raytheon Company. Continuous drying hoods. 4,057,909, Cl. 34-76.000.
Patriquin, George P., to Hudson Lock, Inc. Key controlled security apparatus. 4,057,987, Cl. 70-364.00R.
Patterson, Francis J.; and DeFilippo, Louis M., to Interlake, Inc. Strap guide for strapping machine. 4,058,053, Cl. 100-26.000.
Pauli, Guenter: *See*—
Gauch, Wolfgang; Kaule, Wittich; and Pauli, Guenter, 4,057,919, Cl. 40-2.200.
Payne, Peter R. Pulse-jet water propulsor. 4,057,961, Cl. 60-221.000.
Pellizzi, Anthony: *See*—
Stuff, Alfred; and Pellizzi, Anthony, 4,058,312, Cl. 273-77.00A.
Penco, Sergio: *See*—
Arcamone, Federico; Di Marco, Aurelio; and Penco, Sergio, 4,058,519, Cl. 424-180.000.
Pennington, Charles A. Wood cutting apparatus. 4,058,150, Cl. 144-1.00R.
Penoyer, John A.: *See*—
Bierenbaum, Harvey S.; Penoyer, John A.; and Zimmerman, Daniel, 4,058,582, Cl. 264-154.000.
Perma Bilt Industries: *See*—
Roe, Forrest D.; and Simon, Sidney, 4,058,333, Cl. 292-172.000.
Perrot, Friedrich: *See*—
Giger, Urs; and Perrot, Friedrich, 4,057,885, Cl. 29-177.000.
Peruyero, Jose M. A.: *See*—
Smith, Stuart B.; McAlpin, James J.; Peruyero, Jose M. A.; Hazelton, Ronald L.; and Upchurch, Edward F., 4,058,652, Cl. 526-68.000.
Peter, Strong & Company, Inc.: *See*—
Hill, William W., 4,058,621, Cl. 424-295.000.
Peters, Charles, Jr., to Box Innards, Inc. High speed automatic stacker for partitions and the like. 4,058,226, Cl. 214-7.000.
Peterson, LeRoy, to Reynolds Products Inc. Method of and apparatus for cleaning the icemaker of a carbonated beverage dispensing machine. 4,058,383, Cl. 62-85.000.
Peterson, William Anders, to Bell Telephone Laboratories, Incorporated. Cooperative primary and secondary current limiting to selectively limit aggregate and individual current outputs of a multi output converter. 4,058,758, Cl. 363-80.000.
Petrisko, Edwin M., to United States of America, Navy. Load limiter coupling. 4,058,301, Cl. 267-124.000.
Petro, John D., to Commercial Shearing, Inc. Compensated work port fluid valves and work port compensators. 4,058,135, Cl. 137-106.000.
Petro-Tex Chemical Corporation: *See*—
Baker, James R., 4,058,577, Cl. 260-680.00D.
Petrocarbon Developments Limited: *See*—
Haslam, Alan Alfred, 4,058,589, Cl. 423-359.000.
Peuker, Reinhard: *See*—
Sutter, Hubert; and Peuker, Reinhard, 4,058,654, Cl. 526-159.000.
Pfizer Inc.: *See*—
Cox, David A.; and Shroot, Braham, 4,058,610, Cl. 424-246.000.
Richardson, Kenneth, 4,058,562, Cl. 260-556.0AR.
Phelps, John H., Sr., to King, George; and King, Peggy. Convertible garment. 4,057,854, Cl. 2-128.000.
Philagro S.A.: *See*—
Debourge, Jean-Claude; and Trochme, Martine, 4,058,600, Cl. 424-128.000.
Phillips Petroleum Company: *See*—
Chandler, Craig S., 4,057,997, Cl. 73-23.100.
Cheng, Paul J., 4,058,379, Cl. 55-302.000.
Kleiss, Louis D., 4,057,995, Cl. 73-23.000.
Stansbury, Roy E.; and Shotton, James A., 4,058,402, Cl. 106-16.000.
Piaja, Joseph. Device for the securement of a sighting instrument within the bore of a shotgun. 4,057,905, Cl. 33-234.000.
Piccolo, Luigi; Ghirga, Marcello; Paolinelli, Antonio; and Paganessi, Gian Pietro, to Societa' Italiana Resine S.I.R. S.p.A. Process for the preparation of fertilizers and soil modifiers. 4,058,389, Cl. 71-31.000.
Pickburn, A. Harry S. Mobius drive belt fastener. 4,058,022, Cl. 74-231.0MB.
Picker Corporation: *See*—
Amor, William H., Jr.; and Steffek, Robert J., 4,057,891, Cl. 29-434.000.
Meyer, Fred H., 4,058,833, Cl. 358-111.000.
Vagi, Robert J., 4,058,832, Cl. 358-110.000.
Pierre Fabre S.A.: *See*—
Cousse, Henri; Mouzin, Gilbert; and Rieu, Jean-Pierre, 4,058,558, Cl. 260-515.00A.
Pierrel, Michel, to Pont-A-Mousson S.A. Process for centrifugally casting spheroidal graphite cast iron pipes. 4,058,153, Cl. 164-58.000.
Pilkington, John Scott, to Abbey Electronics Limited. Yarn tension transducer. 4,058,008, Cl. 73-144.000.
Pinkas, David. Retainer for sun visor extension. 4,058,340, Cl. 296-97.00G.
Piosky, Dennis E. Repair template for carpets or the like. 4,057,898, Cl. 30-289.000.
Piper, Donald R., Sr., to Guito, Ralph M., Jr.; and Hooper, Walter L. Marine life growth inhibitor device. 4,058,075, Cl. 114-222.000.
Pipon, Robert: *See*—
Passedouet, Andre Henri; and Pipon, Robert, 4,058,597, Cl. 424-68.000.
Pissiotas, Georg: *See*—
Martin, Henry; Pissiotas, Georg; and Dittrich, Volker, 4,058,604, Cl. 424-211.000.
Plant, David Herbert: *See*—
Hurt, Francis Neil; Theaker, Reginald; and Plant, David Herbert, 4,058,245, Cl. 226-174.000.
Plastomedical Sciences, Inc.: *See*—
Steckler, Robert, 4,058,491, Cl. 260-2.20R.
Ploeger, Kenneth C. Automatic wheel bearing lubricator. 4,058,185, Cl. 184-1.00D.
Pohlemann, Heinz: *See*—
Naarmann, Herbert; and Pohlemann, Heinz, 4,058,508, Cl. 260-77.5BB.
Polaroid Corporation: *See*—
Johnson, Bruce K.; Laskin, Irving; and Whiteside, George D., 4,058,817, Cl. 354-26.000.
Johnson, Bruce K.; and Whiteside, George D., 4,058,818, Cl. 354-33.000.
Pollart, Gary M. Aeration tube. 4,058,261, Cl. 239-542.000.
Pont-A-Mousson S.A.: *See*—
Pierrel, Michel, 4,058,153, Cl. 164-58.000.
Ponzano, Gian Luigi, to Ing. C. Olivetti & C., S.p.A. Magnetic information carrier having both ends free and apparatus for writing on and/or reading it. 4,058,847, Cl. 360-132.000.
Post, Udo: *See*—
von Bonin, Wulf; Kleimann, Helmut; and Post, Udo, 4,058,492, Cl. 260-2.5AM.
Potter, Gordon C., to Exxon Research & Engineering Co. Vapor hose hookup assurance. 4,058,148, Cl. 141-198.000.
Powaska, Tadeusz. Storage container for rolls of toilet tissues. 4,058,354, Cl. 312-45.000.
Powerscreen International Limited: *See*—
O'Neill, Patrick; Douglas, Patrick Joseph; and Mallaghan, Michael Lee, 4,058,198, Cl. 198-313.000.
PPG Industries, Inc.: *See*—
Frank, Robert G., 4,058,200, Cl. 198-382.000.
Prather, Joseph E.; and Khalifa, Ramzi A., to Edson Tool and Manufacturing Company, Inc. Self-locking devices. 4,058,334, Cl. 292-241.000.
Prazak, Premysl: *See*—
Bazika, Vladimir; Prazak, Premysl; and Havelkova, Dana, 4,057,999, Cl. 73-53.000.

Pressmaster, Ltd.: *See*—
Undin, Hans, 4,057,993, Cl. 72-410.000.
Price, George M., to Frymaster Corporation, The. Control system for frying apparatus. 4,058,703, Cl. 219-492.000.
Price, Robert John, to Orbitran Company, Inc. Load cell scale. 4,058,179, Cl. 177-156.000.
Pridonoff, Eric L.: *See*—
Stary, Marvin L.; Brown, Edward L.; and Pridonoff, Eric L., 4,058,147, Cl. 141-45.000.
Priesemuth, Wolfgang. Windshield wiper blade. 4,057,870, Cl. 15-250.410.
Prince, Leon M., to Lever Brothers Co. Quick lathering toilet bars and method of making same. 4,058,487, Cl. 252-552.000.
Prince, Leon M., to Lever Brothers Company. Quick lathering toilet bars and method of making same. 4,058,490, Cl. 252-554.000.
Prins, Johannes. Collapsible chairs. 4,058,341, Cl. 297-39.000.
Pro-Tech, Inc.: *See*—
Martig, Kenneth W., Jr., 4,058,011, Cl. 73-194.00R.
Product Resources International, Inc.: *See*—
Ballin, Gene, 4,057,867, Cl. 15-185.000.
Prokai, Bela; and Kanner, Bernard, to Union Carbide Corporation. Polyester urethane foam produced with cyano-ether polysiloxane-polyoxyalkylene copolymers. 4,058,493, Cl. 260-2.5AH.
Prokai, Bela; and Kanner, Bernard, to Union Carbide Corporation. Polyether urethane foam produced with cyano-ether polysiloxane-polyoxyalkylene copolymers. 4,058,494, Cl. 260-2.5AH.
Prutkovsky, Evgeny Nikolaevich; Bermatov, Mikhail Albertovich; Tarasov, Evgeny Alexandrovich; Ozerov, Valery Ilich; Fedosjuk, Alexandr Fedorovich; and Krokhin, Vladimir Andreevich. Steam-gas power plant. 4,057,966, Cl. 60-678.000.
Public Safety Equipment, Inc.: *See*—
Menke, W. Kenneth, 4,058,794, Cl. 340-92.000.
Puccetti, Ralph P.; and Klopfenstein, King L., to Triangle Package Machinery Company. Self-locking support for tubular members. 4,058,268, Cl. 242-72.00R.
Pylon Corporation: *See*—
Longman, Rodney A.; and Chiaramonte, Thomas J., 4,057,869, Cl. 15-250.320.
Q. P Corporation: *See*—
Terumoto, Masahiro, 4,058,364, Cl. 21-80.000.
Quadrastat Controls Corporation: *See*—
Lauper, Warner R., 4,058,018, Cl. 74-18.200.
Quets, Jean Marie Louis Joseph, to Union Carbide Corporation. Preparation of sub-micron metal oxide powders from chloride-containing compounds. 4,058,592, Cl. 423-594.000.
Quinn, Peter W., to Lorlin Industries Inc. Method and apparatus for automatically testing reeled axial-lead electrical devices under environmental conditions. 4,058,219, Cl. 209-81.00R.
R. D. Products, Inc.: *See*—
Darjany, John C., 4,058,839, Cl. 360-2.000.
Racz, Istvan: *See*—
Zsolnai, Tibor; Lugosi, Gyorgy; Szepesi, Istvan; Bakonyi, Maria; Racz, Istvan; and Radvany nee Hegedus, Erzsebet, 4,058,608, Cl. 424-226.000.
Radiant Grate, Inc.: *See*—
Dahlquist, Emil F., 4,058,108, Cl. 126-137.000.
Radiometer A/S: *See*—
Christiansen, Torbe Falch, 4,058,447, Cl. 204-195.00P.
Krogh, Soren-Christian, 4,058,365, Cl. 23-230.00R.
Radvany nee Hegedus, Erzsebet: *See*—
Zsolnai, Tibor; Lugosi, Gyorgy; Szepesi, Istvan; Bakonyi, Maria; Racz, Istvan; and Radvany nee Hegedus, Erzsebet, 4,058,608, Cl. 424-226.000.
Raible, Donald A.: *See*—
Bentley, Donald J.; and Raible, Donald A., 4,058,369, Cl. 23-258.50B.
Rank Xerox Ltd.: *See*—
Harada, Masaaki, 4,058,305, Cl. 271-16.000.
Warner, George M.; and Andberg, Leif E., 4,058,815, Cl. 355-14.000.
Rankin, William J., to T. D. Williamson, Inc. Pipeline fitting. 4,058,142, Cl. 138-89.000.
Rantala, Ossi: *See*—
Visa, Heikki; Rantala, Ossi; and Risti, Antti, 4,058,231, Cl. 214-516.000.
Rapino, Norman G.; and DeMuro, Frank P. Method and apparatus for drying clothes. 4,057,907, Cl. 34-4.000.
Raponi, Dante A. Cementitious composition. 4,058,406, Cl. 106-90.000.
Rasp, Christian; Scharfe, Gerhard; and Grolig, Johann, to Bayer Aktiengesellschaft. Process for the preparation of acetoxybutanal. 4,058,556, Cl. 560-231.000.
Rath, Johann. Insert receiving and securing device. 4,058,284, Cl. 249-163.000.
Rau, Kurt: *See*—
Schminke, Heinz; Rau, Kurt; and Batza, Willi, 4,058,377, Cl. 55-148.000.
Ray, James A., to Martin Marietta Corporation. Hydraulic cement mixes and process for improving hydraulic cement mixes. 4,058,407, Cl. 106-92.000.
Raymond International Inc.: *See*—
Holland, Henry A. Nelson, 4,058,175, Cl. 173-1.000.
Raymond Lee Organization Inc.: *See*—
Marlowe, Kenneth P., 4,057,927, Cl. 43-43.600.
Raytheon Company: *See*—
Bryden, Joseph E., 4,058,810, Cl. 343-17.10R.
Paterson, Malcolm M.; DiMercurio, John S.; and Mooradian, Albert H., 4,057,909, Cl. 34-76.000.
Stout, Karl J., 4,058,727, Cl. 250-363.00R.
RCA Corporation: *See*—
Ahmed, Adel Abdel Aziz, 4,058,760, Cl. 323-19.000.
Allen, Elmer Lawrence, Jr.; and Kawamoto, Hirohisa, 4,058,776, Cl. 330-299.000.
Brooks, Ronald Robert, 4,058,751, Cl. 315-200.00A.
Crowle, Brian, 4,058,775, Cl. 330-267.000.
Khajezadeh, Heshmat; and Ahrens, Stephen Carl, 4,057,894, Cl. 29-577.00C.
Risko, John Joseph, 4,058,813, Cl. 343-786.000.
Recognition Equipment Incorporated: *See*—
Kao, Charles T.; Lafevers, James O.; and Walker, Donny R., 4,058,706, Cl. 235-449.000.
Reed, Thomas G., Jr. Apparatus for treating oil shale. 4,058,205, Cl. 202-86.000.
Rehm, Gustav A., to Aqua-Chem, Inc. Boiler. 4,058,087, Cl. 122-235.00R.
Reichl, Richard: *See*—
Kummer, Werner; Stahle, Helmut; Koppe, Herbert; Haarmann, Walter; and Reichl, Richard, 4,058,616, Cl. 424-267.000.
Reilly, Edward Justus: *See*—
Brown, Arling Dix, Jr.; and Reilly, Edward Justus, 4,058,814, Cl. 346-154.000.
Reinecke, Erich, to WABCO Westinghouse GmbH. Load-responsive linking device for vehicle brake pressure regulators. 4,058,347, Cl. 303-22.00R.
Reinke, August: *See*—
Schulz, Siegfried; Eicker, Karl G.; and Reinke, August, 4,058,693, Cl. 200-67.00F.
Reiss, Karl Hans; Kotschak, Otto; and Conrad, Bernhard, to Siemens Aktiengesellschaft. Gamma camera. 4,058,721, Cl. 250-213.0VT.
Reist, Walter; Hansch, Egon; and Gosslinghoff, Reinhard, to Ferag AG. Apparatus for processing products especially printed products. 4,058,202, Cl. 198-482.000.
Reitz, Ortwin; and Retoret, Jean-Pierre, to Institut Francais du Petrole; and BASF Aktiengesellschaft. Hydrocracking process. 4,058,449, Cl. 208-59.000.
Rempel, William D., to Sycor, Inc. Printer with interchangeable paper-feed modules. 4,058,196, Cl. 197-133.00R.
Renfrow, Lonnie C. Suspension means for automobile fog light. 4,058,720, Cl. 362-82.000.
Renold Limited: *See*—
Wood, Peter, 4,058,021, Cl. 74-229.000.
Renth, Ernst-Otto; Mentrup, Anton; Schromm, Kurt; and Walland, Alexander, to Boehringer Ingelheim GmbH. 2-Amino-3-(3'-hydroxyphenyl)-propanols and salts thereof. 4,058,642, Cl. 424-330.000.
Research and Development Laboratories of Ohno Co., Ltd.: *See*—
Ohno, Genji, 4,058,637, Cl. 427-15.000.
Resh, Roy E.: *See*—
Vogel, Ronald F.; Boldt, Robert R.; McKee, Kevin D.; Resh, Roy E.; and West, Paul E., 4,058,766, Cl. 324-61.00R.
Resistoflex Corporation: *See*—
Nickerson, Harvey R.; Rink, Helm A.; and Menzel, John K., 4,058,328, Cl. 285-45.000.
Restaino, Alfred J.: *See*—
Markiewitz, Kenneth H.; and Restaino, Alfred J., 4,058,656, Cl. 526-215.000.
Retoret, Jean-Pierre: *See*—
Reitz, Ortwin; and Retoret, Jean-Pierre, 4,058,449, Cl. 208-59.000.
Reuter, Frederick A.: *See*—
Hochradel, Ernest; Hauer, Werner; Meyer, Martin R.; and Reuter, Frederick A., 4,058,274, Cl. 243-5.000.
Reuter, Wolfgang: *See*—
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Reuting, Hans-Werner, to Elmeg Elektro-Mechanik GmbH. Rapid action relay. 4,058,783, Cl. 335-276.000.
Reynolds, John E.: *See*—
Bavisotto, Robert G.; Reynolds, John E.; and Sbert, Robert S., 4,058,789, Cl. 338-322.000.
Reynolds Products Inc.: *See*—
Peterson, LeRoy, 4,058,383, Cl. 62-85.000.
Rhone-Poulenc Industries: *See*—
Barreau, Michel; Cotrel, Claude; and Jeanmart, Claude, 4,058,611, Cl. 424-250.000.
Passedouet, Andre Henri; and Pipon, Robert, 4,058,597, Cl. 424-68.000.
Rhone-Poulenc S.A.: *See*—
Menand, Henri; and Mison, Andre, 4,058,509, Cl. 260-79.700.
Rhone-Progil: *See*—
Daumas, Jean-Claude, 4,058,574, Cl. 260-659.00A.
Ribka, Joachim: *See*—
Heinrich, Ernst; and Ribka, Joachim, 4,058,518, Cl. 260-156.000.
Riblet, Gordon, to Microwave Development Labs., Inc. Waveguide circulator. 4,058,780, Cl. 333-1.100.
Richardson, David; and Kageyama, Paul. General displacement sensor. 4,058,765, Cl. 324-61.00R.
Richardson, David: *See*—
Giurlando, Angelo C.; and Richardson, David, 4,058,361, Cl. 417-312.000.
Richardson, Kenneth, to Pfizer Inc. Antiviral substituted (phenylenedimethylene) diamines. 4,058,562, Cl. 260-556.0AR.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Kekesy, Tibor; Szeberenyi, Szabolcs; Beer, Gyorgy; Dudas, Antal; Hajos, Gyorgy; Szporny, Laszlo; and Czajlik, Eva, nee Csizer, 4,058,522, Cl. 260-239.570.

Richter, Reinhard H., to Upjohn Company, The. Novel schiff bases. 4,058,563, Cl. 260-566.00F.

Riddle, John B.; and Bogert, Howard Z., Jr., to Micro Magnetic Industries, Inc. Multiple document recognition apparatus. 4,058,194, Cl. 194-4.00C.

Ridley, Peter Tone; and Weidley, Edwin Frank, to SmithKline Corporation. Skeletal muscle relaxant compositions comprising α,α-diphenyl-3-tropidineethanol and methods of producing skeletal muscle relaxation. 4,058,615, Cl. 424-265.000.

Riebel, Hans-Jochem: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Eue, Ludwig; and Schmidt, Robert R., 4,058,525, Cl. 544-182.000.
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Hammann, Ingeborg; and Stendel, Wilhelm, 4,058,603, Cl. 424-200.000.

Rieder, Alois, to AGFA-Gevaert, A.G. Analog/digital control arrangement for photographic apparatus. 4,058,819, Cl. 354-44.000.

Ries, Karl; Hannoschock, Kurt; and Simoneit, Gunter, to Mannesmann Aktiengesellschaft. Ultrasonic immersion type testing. 4,058,000, Cl. 73-644.000.

Rieu, Jean-Pierre: *See—*
Cousse, Henri; Mouzin, Gilbert; and Rieu, Jean-Pierre, 4,058,558, Cl. 260-515.00A.

Riken Keikinzoku Kogyo Kabushiki Kaisha: *See—*
Nakamura, Yoshihiro, 4,057,937, Cl. 49-372.000.

Rim, Yong S.: *See—*
Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., 4,058,568, Cl. 260-607.0AR.

Rimmington, Brenda: *See—*
Firth, Jack Graham; Jones, Thomas Alwyn; and Rimmington, Brenda, 4,057,996, Cl. 73-23.000.

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Nickerson, Harvey R.; Rink, Helm A.; and Menzel, John K., 4,058,328, Cl. 285-45.000.

Risko, John Joseph, to RCA Corporation. Sheet metal waveguide horn antenna. 4,058,813, Cl. 343-786.000.

Risti, Antti: *See—*
Visa, Heikki; Rantala, Ossi; and Risti, Antti, 4,058,231, Cl. 214-516.000.

Rite Autotronics Corporation: *See—*
Schwartz, Edwin L., 4,058,016, Cl. 73-419.000.

Rizkalla, Nabil; and Naglieri, Anthony N., to Halcon International, Inc. Conversion of thallium (I) to thallium (III). 4,058,542, Cl. 260-429.00R.

Roan, Charles F., to GB Fermentation Industries, Inc. Enzyme-treated fried food. 4,058,631, Cl. 426-52.000.

Robbins, Clarence R.: *See—*
Crawford, Richard J.; and Robbins, Clarence R., 4,058,131, Cl. 132-7.000.

Robert Bosch GmbH: *See—*
Drews, Ulrich; Kraus, Bernd; Singer, Erich; and Schnurle, Hans, 4,058,106, Cl. 123-198.0DB.
Linder, Ernst; Hertfelder, Wilhelm; Schnaibel, Eberhard; and Junginger, Erich, 4,058,255, Cl. 237-12.30B.
Schmidt, Peter; and Worz, Helmut, 4,058,089, Cl. 123-32.0ED.
Zahn, Heinrich, 4,058,845, Cl. 360-107.000.

Robins, Roland K.; Shuman, Dennis A.; and Boswell, Kay H., to ICN Pharmaceuticals, Inc. 6,8-Disubstituted purine derivatives of 9-β-D-ribofuranosyl 3',5'-cyclic phosphate. 4,058,659, Cl. 536-27.000.

Rochmann, Jacques, to Soletanche. Method and device for obtaining a water-tight shield in the soil with the use of nozzles. 4,057,969, Cl. 61-35.000.

Rockwell International Corporation: *See—*
George, Peter K.; and Oeffinger, Thomas R., 4,058,799, Cl. 340-174.0TF.

Roe, Forrest D.; and Simon, Sidney, to Perma Bilt Industries. Door latch for recreational vehicle and other applications. 4,058,333, Cl. 292-172.000.

Roehrich, Christian, to Nuova San Giorgio S.p.A. Cleaning device for open-end spinning units. 4,057,955, Cl. 57-56.000.

Roemer, Benjamin C. Snowmobile trail leveler. 4,057,916, Cl. 37-43.00R.

Roger, Bernard: *See—*
Bonis, Maurice; and Roger, Bernard, 4,058,825, Cl. 357-46.000.

Rogers, Robert N., to Coffey, John R.; and Conliff, Vincent B., deceased, part interest to each. Helically wound expandable filter. 4,058,464, Cl. 210-356.000.

Rogier, Edgar R.: *See—*
MacKay, Kenneth D.; and Rogier, Edgar R., 4,058,585, Cl. 423-24.000.

Rogler, Walter: *See—*
Ackermann, Otto; Bleh, Otto, deceased; and Rogler, Walter, 4,058,553, Cl. 560-180.000.

Rogowski, Robert P.: *See—*
Simmons, James R.; and Rogowski, Robert P., 4,058,270, Cl. 242-105.000.

Rohde, Wolfgang: *See—*
Bellenberg, Heinz; Kucharzyk, Werner; Rohde, Wolfgang; and Siebert, Werner, 4,058,230, Cl. 214-18.200.

Rohe, Lothar: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; Eue, Ludwig; and Schmidt, Robert R., 4,058,525, Cl. 544-182.000.

Rohlfs, John H. Portable sand blasting device. 4,057,938, Cl. 51-429.000.

Rohosy, Soma M.: *See—*
Schreyer, Kenneth D.; Rohosy, Soma M.; and Manney, Charles J., 4,058,291, Cl. 254-74.000.

Rohrberg, Rod G.; Trentz, Henry Patrick; and Ziegler, Victor Herbert, to Rohrberg, Rod G.; and Trentz, Henry P. Quick release mechanism for window guard or the like. 4,057,935, Cl. 49-56.000.

Romanenko, Oleg Nikolaevich: *See—*
Muzhzhavlev, Konstantin Dmitrievich; Kosarev, Sergei Petrovich; Schegolev, Vladimir Ivanovich; Ivanov, Andrei Borisovich; Romanenko, Oleg Nikolaevich; Yazev, Vladimir Dmitrievich; and Vasiliev, Alexei Vasilievich, 4,058,448, Cl. 204-244.000.

Roney, Robert M.: *See—*
Dalton, James H.; Stover, S. Dalton; and Roney, Robert M., 4,058,740, Cl. 307-116.000.

Rosen, Paul W.; and Gunderson, Cary A. Interior pipe coating apparatus. 4,058,258, Cl. 239-165.000.

Rosenbaum, Heinz Jorg: *See—*
Thiel, Reinhard; and Rosenbaum, Heinz Jorg, 4,058,565, Cl. 260-586.0AB.

Rosequist, Craig D. Walking device. 4,058,119, Cl. 128-80.00R.

Rossi, Giorgio: *See—*
Abbruzzese, Luigi; Gozzo, Franco; Rossi, Giorgio; Masoero, Marcella; Lorusso, Simone; Bonola, Paola; and Tamburin, Gino, 4,058,613, Cl. 424-258.000.

Roth, Willy, to Hoffmann-La Roche Inc. Composition and method for killing snails and slugs. 4,058,626, Cl. 424-333.000.

Rothfuss, Robert G.: *See—*
Kramer, Francis J.; Rothfuss, Robert G.; and Wise, William C., 4,058,047, Cl. 85-11.000.

Royon, Jean: *See—*
Bonnemay nee Couture, Andree; Royon, Jean; Bereau, Jean; and Catonne, Jean-Claude, 4,058,441, Cl. 204-103.000.

Rubin, Irwin, to Sensor Technology, Inc. Microprocessor controlled card reader/printer. 4,058,056, Cl. 101-93.190.

Ruble, Theodore A., to Sid Richardson Carbon & Gasoline Co. Carbon black reactor with turbofan. 4,058,590, Cl. 423-449.000.

Ruddy, John M.: *See—*
Dunn, Robert T.; Brown, William M.; and Ruddy, John M., 4,058,678, Cl. 179-2.50R.

Rufer, Clemens: *See—*
Ahrens, Hanns; Biere, Helmut; Rufer, Clemens; Schmiechen, Ralph; Schroeder, Eberhard; Loge, Olaf; Losert, Wolfgang; and Schillinger, Ekkehard, 4,058,619, Cl. 424-275.000.

Rugg Manufacturing Company: *See—*
Rugg, William P., 4,057,953, Cl. 56-400.170.

Rugg, William P., to Rugg Manufacturing Company. Triangular lawn rake. 4,057,953, Cl. 56-400.170.

Ruhrkohle AG: *See—*
Schier, Josef, 4,058,455, Cl. 209-139.00R.

Runac, John J., to Crescent Hosiery Mills. Ventilated cushion foot sock and method. 4,057,981, Cl. 66-185.000.

Russell, William J., to United States of America, Army. Rapid universal sensing cell. 4,058,438, Cl. 204-1.00T.

Russo, Evangelista. Track for crawler type vehicles. 4,058,350, Cl. 305-54.000.

Saari, Walfred S., to Merck & Co., Inc. Amino acid esters. 4,058,530, Cl. 260-281.0GN.

Sachleben, Harold Gerard, Sr.; and Warren, Jerry Jay, to Allied Chemical Corporation. Exhaust quench air diffuser. 4,057,910, Cl. 34-227.000.

Sack, Thomas F. Portable psycho-physical automobile driver testing device. 4,057,911, Cl. 35-11.00R.

Sacuta, Aleksy: *See—*
Patel, Mahendra S.; and Sacuta, Aleksy, 4,058,453, Cl. 208-188.000.

Saito, Masumi: *See—*
Yukuta, Toshio; Ohashi, Takashi; Saito, Masumi; and Arai, Katsuhiko, 4,058,503, Cl. 260-47.0CP.

Saito, Taiji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air cleaner assembly. 4,058,099, Cl. 123-122.00D.

Saito, Takemi: *See—*
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Saito, Yoshio: *See—*
Takechi, Hiroshi; Abe, Mitsunobu; Katsutani, Ryoseki; and Saito, Yoshio, 4,057,989, Cl. 72-128.000.

Sakudo, Noriyuki; Tokiguchi, Katsumi; and Kanomata, Ichiro, to Hitachi, Ltd. Microwave discharge ion source. 4,058,748, Cl. 313-156.000.

Salmond, William G., to Upjohn Company, The. 3α,5α-Cyclo-6β-alkoxy-α^{22}-bis-nor cholestene derivatives. 4,058,538, Cl. 260-397.200.

Sam Stein Associates, Inc.: *See—*
Miller, Michael E., 4,058,083, Cl. 118-16.000.

Sanderson, Brian Robert: *See—*
Brown, Clifford Gordon; and Sanderson, Brian Robert, 4,058,588, Cl. 423-283.000.

Sandoz Ltd.: *See—*
Mislin, Roland; and Uehlinger, Hanspeter, 4,058,516, Cl. 260-152.000.
Uehlinger, Hanspeter, 4,058,514, Cl. 260-145.00B.

Sansui Electric Co., Ltd.: *See—*
Kobayashi, Fumio; and Koshigoe, Shozo, 4,058,675, Cl. 179-1.00G.

Sarsten, Jan A., to Exxon Research & Engineering Co. Fractional condensation of an NG feed with two independent refrigeration cycles. 4,057,972, Cl. 62-23.000.
Sartorius-Werke GmbH: *See*—
Exner, Rainer, 4,058,007, Cl. 73-141.00A.
Satho, Fumihiko: *See*—
Shibayama, Kyoichi; Satho, Fumihiko; and Naitho, Mamoru, 4,058,444, Cl. 204-181.000.
Sato, Teruo: *See*—
Taira, Kaoru; Sato, Teruo; Ishii, Yoshiya; Miyata, Yukinori; and Okamoto, Katashi, 4,058,101, Cl. 123-140.0MP.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Portable tagging machine. 4,058,051, Cl. 93-88.000.
Sato, Yoshimasa; Tsukuda, Toshio; Inoue, Hajime; and Mutsuta, Akio, to Sumitomo Heavy Industries, Ltd.; and Sumitomo Metal Industries, Ltd. Apparatus for cooling pellets. 4,057,978, Cl. 62-331.000.
Sawada, Fred H.; Klementowski, Frank M.; and Bishop, James S., to General Electric Company. Signal monitoring system. 4,058,804, Cl. 340-248.00A.
Sawada, Toshio: *See*—
Ishikawa, Hitoshi; Yamamoto, Kimihiko; Sawada, Toshio; and Kasahara, Takahiko, 4,058,072, Cl. 112-258.000.
Sawyer, Joe F. Method and apparatus for conveying and breaking apart fiber modules. 4,057,876, Cl. 19-80.00R.
Saxton, Forest J. Heat transfer device. 4,058,378, Cl. 55-257.00R.
Sbert, Robert S.: *See*—
Bavisotto, Robert G.; Reynolds, John E.; and Sbert, Robert S., 4,058,789, Cl. 338-322.000.
Scanlon, Patricia Marie: *See*—
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, 4,058,527, Cl. 260-251.00R.
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, 4,058,528, Cl. 260-251.00R.
Schafer, Norbert: *See*—
Muller, Karl-Heinz; Munchmeyer, Walter; von Rauch, Moriz; and Schafer, Norbert, 4,058,731, Cl. 250-442.000.
Schantz, John S.: *See*—
Schantz, Socrates J., 4,058,259, Cl. 239-276.000.
Schantz, Raymond G.: *See*—
Schantz, Socrates J., 4,058,259, Cl. 239-276.000.
Schantz, Socrates J., to Schantz, John S.; and Schantz, Raymond G., part interest to each. Handle and stand for pressure spraying. 4,058,259, Cl. 239-276.000.
Schantz, Spencer C. Double pole contact operating mechanism. 4,058,781, Cl. 335-186.000.
Scharf, Daniel J., to Hooker Chemicals & Plastics Corporation. Brominated carbamoyl derivatives. 4,058,466, Cl. 252-8.100.
Scharfe, Gerhard: *See*—
Rasp, Christian; Scharfe, Gerhard; and Grolig, Johann, 4,058,556, Cl. 560-231.000.
Schegolev, Vladimir Ivanovich: *See*—
Muzhzhavlev, Konstantin Dmitrievich; Kosarev, Sergei Petrovich; Schegolev, Vladimir Ivanovich; Ivanov, Andrei Borisovich; Romanenko, Oleg Nikolaevich; Yazev, Vladimir Dmitrievich; and Vasiliev, Alexei Vasilievich, 4,058,448, Cl. 204-244.000.
Scheidweiler, Andreas, to Cerberus AG. Duplex ionization-type fire sensor. 4,058,803, Cl. 340-237.500.
Schellin, Carl W.; and Lundberg, John P., to Scorpion, Inc. Snowmobile safety switch system. 4,058,105, Cl. 123-198.0DC.
Schering Aktiengesellschaft: *See*—
Ahrens, Hanns; Biere, Helmut; Rufer, Clemens; Schmiechen, Ralph; Schroeder, Eberhard; Loge, Olaf; Losert, Wolfgang; and Schillinger, Ekkehard, 4,058,619, Cl. 424-275.000.
Hoffmann, Rolf-Rudiger; and Fuchs, Peter, 4,058,623, Cl. 424-317.000.
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Scherrer, Hanspeter: *See*—
Boller, Arthur; and Scherrer, Hanspeter, 4,058,476, Cl. 252-299.000.
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Boller, Arthur; and Scherrer, Hanspeter, 4,058,478, Cl. 252-299.000.
Scheuneman, James Herman, to Sperry Rand Corporation. Conditional bypass of error correction for dual memory access time selection. 4,058,851, Cl. 364-900.000.
Schiegl, Wolf-Eberhard: *See*—
Meyer, Rudolf; Schiegl, Wolf-Eberhard; and Taumann, Leonhard, 4,058,730, Cl. 250-397.000.
Schier, Josef, to Ruhrkohle AG. Rotary separator. 4,058,455, Cl. 209-139.00R.
Schillinger, Ekkehard: *See*—
Ahrens, Hanns; Biere, Helmut; Rufer, Clemens; Schmiechen, Ralph; Schroeder, Eberhard; Loge, Olaf; Losert, Wolfgang; and Schillinger, Ekkehard, 4,058,619, Cl. 424-275.000.
Schlagel, Inc.: *See*—
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Schlagel, William A., to Schlagel, Inc. In-mass conveyor with intermediate discharge. 4,058,199, Cl. 198-370.000.
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Schmid, Richard R., to Lockwood Manufacturing Company. Waffle transfer machine. 4,058,039, Cl. 83-155.000.
Schmidt, Alfred, Jr., to Ing. Alfred Schmidt GmbH, Firma. Ring structure for preventing blade damage. 4,057,915, Cl. 37-43.00C.
Schmidt, Bradley J., to Illinois Tool Works Inc. Roller mount. 4,057,872, Cl. 16-29.000.
Schmidt, Karl Wilhelm, to Gebruder Schmidt Metallwarenfabrik. Paper-clip dispenser. 4,058,209, Cl. 206-350.000.
Schmidt, Peter; and Worz, Helmut, to Robert Bosch GmbH. Electrically controlled fuel injection system. 4,058,089, Cl. 123-32.0ED.
Schmidt, Robert R.: *See*—
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Schmiechen, Ralph: *See*—
Ahrens, Hanns; Biere, Helmut; Rufer, Clemens; Schmiechen, Ralph; Schroeder, Eberhard; Loge, Olaf; Losert, Wolfgang; and Schillinger, Ekkehard, 4,058,619, Cl. 424-275.000.
Schminke, Heinz; Rau, Kurt; and Batza, Willi, to Metallgesellschaft Aktiengesellschaft. Dust collecting electrostatic precipitator. 4,058,377, Cl. 55-148.000.
Schnaibel, Eberhard: *See*—
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Schneider, Helmut: *See*—
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Schneider, Seymour. Method and system for generating oscillographic displays of analog signals upon a TV. 4,058,826, Cl. 358-10.000.
Schneider, Walter Max, to Land O'Frost Inc. Packaging machine. 4,057,951, Cl. 53-55.000.
Schnurle, Hans: *See*—
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Schoberl, Werner, to Licentia Patent-Verwaltungs-G.m.b.H. Light emitting semiconductor indicating structure with light conductors. 4,058,750, Cl. 313-500.000.
Schoeller & Co. Elektrotechnische Fabrik GmbH & Co.: *See*—
Gruber, Carl F.; and Siebel, Georg, 4,058,701, Cl. 219-270.000.
Schonbeck, Rupert; Kloimstein, Engelbert; and Wittmann, Erwin, to Chemie Linz Aktiengesellschaft. Amine salts of phenyl-4-hydroxypyridazines and the preparation and herbicidal compositions thereof. 4,058,390, Cl. 71-92.000.
Schorsch, Eugene: *See*—
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Schramm, Arthur G. Elevating trailer. 4,058,325, Cl. 280-43.180.
Schreurs, Willy P., to GTE Sylvania Incorporated. Method of making fluorescent lamp. 4,058,639, Cl. 427-67.000.
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Schreyer, Kenneth D.; Rohosy, Soma M.; and Manney, Charles J., to Columbus McKinnon Corporation. Load binder. 4,058,291, Cl. 254-74.000.
Schroeder, Eberhard: *See*—
Ahrens, Hanns; Biere, Helmut; Rufer, Clemens; Schmiechen, Ralph; Schroeder, Eberhard; Loge, Olaf; Losert, Wolfgang; and Schillinger, Ekkehard, 4,058,619, Cl. 424-275.000.
Schromm, Kurt: *See*—
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Schulz, Siegfried; Eicker, Karl G.; and Reinke, August, to K. A. Schmersal & Co. Schaltgeratefabrik. Electric snap-action switch. 4,058,693, Cl. 200-67.00F.
Schummer, Gunter: *See*—
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Schuster-Woldan, Hans; Weingand, Kaspar; and Koch, Dirk, to Siemens Aktiengesellschaft. Process for producing a thin metal structure with a self-supporting frame. 4,058,432, Cl. 156-659.000.
Schuttler, Wilhelm, to Maschinenfabrik Stahlkontor Weser Lenze KG. Web spooling machine. 4,058,267, Cl. 242-56.00A.
Schwartz, Edwin L., to Rite Autotronics Corporation. Combination vacuum/pressure gauge and dual purpose casing construction. 4,058,016, Cl. 73-419.000.
Schwartz, James W.: *See*—
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Schwartz, Seymour L., to Airflow Aluminum Awning Company. Modular green house construction. 4,057,941, Cl. 52-63.000.
Schwarze, Werner: *See*—
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SCM Corporation: *See*—
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Mitch, Frank A., 4,058,628, Cl. 424-343.000.
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Scorpion, Inc.: *See*—
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Scott, Robert A. Irrigation gravel guard. 4,057,968, Cl. 61-12.000.
Sebag, Henri: *See*—
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Sedig, Albert R.: *See*—
Panek, George J.; Ingham, Francis H.; Sedig, Albert R.; and Nieman, Gerald R., 4,058,671, Cl. 174-151.000.
Seeburg Corporation, The: *See*—
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Seelert, Kurt: *See*—
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Seemayer, Walter: *See*—
Choksi, Pradip Vinobchandra; Johnston, Donald Leroy; and Seemayer, Walter, 4,058,121, Cl. 128-221.000.
Seifert, Arthur. Spring stub axle railway vehicle. 4,058,065, Cl. 105-180.000.
Seitz, Charles L.: *See*—
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Sekiguchi, Tomoaki; Miyao, Hiroyasu; and Shimizu, Hidekazu, to Yamaha Hatsudoki Kabushiki Kaisha. Turn signal system. 4,058,797, Cl. 340-56.000.
Sekmakas, Kazys; and Hesler, Kenneth K., to DeSoto, Inc. Pigmented latex paints having superior gloss prepared by grinding a pigment into a solution of a copolymer of an unsaturated carboxylic acid. 4,058,499, Cl. 260-29.6RW.
Semiconductor Sensors, Inc.: *See*—
Svensson, Christer Martinus; Lundkvist, Leif Sigurd; Lundstrom, Kurt Ingemar; and Shivaraman, Madurai Somanathan, 4,058,368, Cl. 23-254.00E.
Senco Products, Inc.: *See*—
Kramer, Francis J.; Rothfuss, Robert G.; and Wise, William C., 4,058,047, Cl. 85-11.000.
Sensor Technology, Inc.: *See*—
Rubin, Irwin, 4,058,056, Cl. 101-93.190.
Serkez, Alvin A. Transmitter cut-off device. 4,058,690, Cl. 179-167.000.
Serratore, Joseph; King, Laurence F.; Sutherland, Thomas H.; and Wallace, James R., to Exxon Research & Engineering Co. Preparation of high bulk density/low porosity PVC resins. 4,058,495, Cl. 260-17.00A.
Setterholm, Jeffrey M. Suspendible sleeping surface and tent. 4,057,859, Cl. 5-121.000.
Seufert, Wilhelm, to Werner & Pfleiderer. Internal mixer. 4,058,297, Cl. 366-81.000.
Seymour, Charles Mitchell. Portable hydraulic tool useful for cutting nuts. 4,057,897, Cl. 30-272.00R.
Shakshober, MacLean C.; Schorsch, Eugene; and Atkinson, Paul E., to Sun Shipbuilding & Dry Dock Company. Pneumatic conveying of granular materials from a nonpressurized environment. 4,058,227, Cl. 214-13.000.
Sharp Kabushiki Kaisha: *See*—
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Sheikh, Sikander, to Xerox Corporation. Programmable controller. 4,058,850, Cl. 364-900.000.
Shelton, Glenmore Lorraine, Jr.: *See*—
Fitzgerald, William Joseph; Shelton, Glenmore Lorraine, Jr.; and Wolfe, Robert Nolan, 4,058,849, Cl. 364-520.000.
Shepherd, Robert Gordon; and Miner, Thomas Gary, to American Cyanamid Company. Polysubstituted-alkyl esters of 4-alkylaminobenzoic acids. 4,058,550, Cl. 560-43.000.
Sher, Arden. Pyroelectric apparatus including effectively intrinsic semiconductor for converting radiant energy into electric energy. 4,058,729, Cl. 250-370.000.
Sherer, Paul; and Hester, Gerald Paul, to MSI Data Corporation. Bar code reader and decoder. 4,058,708, Cl. 235-92.0CC.
Shiba, Motoharu: *See*—
Hata, Shun-ichi; Mizuno, Koji; Nishii, Yasuho; Mitsuishi, Etsuko; and Shiba, Motoharu, 4,058,601, Cl. 424-180.000.
Shibahara, Masashi, to Nihon Hammond Kabushiki Kaisha. Programmable rhythm apparatus. 4,058,043, Cl. 84-1.030.
Shibayama, Kyoichi; Satho, Fumihiko; and Naitho, Mamoru, to Mitsubishi Denki Kabushiki Kaisha. Process for preparing an insulated product. 4,058,444, Cl. 204-181.000.
Shidler, Karl Allen: *See*—
Knutson, Gerald Roy; and Shidler, Karl Allen, 4,058,846, Cl. 360-121.000.
Shiley Laboratories, Inc.: *See*—
Fettel, Bruce E., 4,057,857, Cl. 3-1.500.
Shimizu, Hidekazu: *See*—
Sekiguchi, Tomoaki; Miyao, Hiroyasu; and Shimizu, Hidekazu, 4,058,797, Cl. 340-56.000.
Shimizu, Masao, to Kim, Taeo. Coilable and severable heating element. 4,058,704, Cl. 219-528.000.
Shimizu, Senzo: *See*—
Ko, Keiun; Takashina, Naomitsu; Shimizu, Senzo; Ikegami, Masuya; and Iwamoto, Yoshinori, 4,058,497, Cl. 260-22.00A.
Shimizu, Shinkichi: *See*—
Shiraishi, Tatsuo; Shimizu, Shinkichi; and Ichihashi, Hiroshi, 4,058,547, Cl. 260-465.300.
Shindo, Minoru: *See*—
Mori, Takashi; Takaku, Sakae; Oi, Nobuhiro; Shindo, Minoru; Hirano, Takeaki; Kataoka, Shigeyuki; and Furuno, Kouji, 4,058,523, Cl. 544-165.000.
Shinohara, Shinitsu; Uchino, Hisanori; and Yamaji, Hiroyuki, to Tadano Ironworks Co., Ltd. Hydraulic cylinder unit. 4,058,178, Cl. 177-146.000.
Shinozaki, Satoshi: *See*—
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,058,419, Cl. 148-175.000.
Shionogi & Co., Ltd.: *See*—
Uyeo, Shoichiro; Aoki, Tsutomu; and Nagata, Wataru, 4,058,521, Cl. 260-239.100.
Shiozaki, Shoji: *See*—
Hikosaka, Noboru; Watanabe, Mitsuo; and Shiozaki, Shoji, 4,058,092, Cl. 123-32.0ST.
Shiraishi, Tatsuo; Shimizu, Shinkichi; and Ichihashi, Hiroshi, to Sumitomo Chemical Company, Limited. Catalytic process for the production of acrylonitrile. 4,058,547, Cl. 260-465.300.
Shivaraman, Madurai Somanathan: *See*—
Svensson, Christer Martinus; Lundkvist, Leif Sigurd; Lundstrom, Kurt Ingemar; and Shivaraman, Madurai Somanathan, 4,058,368, Cl. 23-254.00E.
Shizaoki, Tetsuya: *See*—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, 4,058,665, Cl. 560-121.000.
Shotton, James A.: *See*—
Stansbury, Roy E.; and Shotton, James A., 4,058,402, Cl. 106-16.000.
Shroot, Braham: *See*—
Cox, David A.; and Shroot, Braham, 4,058,610, Cl. 424-246.000.
Shull, Charles S.: *See*—
Morgan, Albert W.; Shull, Charles S.; and Vanderlinde, William, 4,058,658, Cl. 526-261.000.
Shuman, Dennis A.: *See*—
Robins, Roland K.; Shuman, Dennis A.; and Boswell, Kay H., 4,058,659, Cl. 536-27.000.
Sias, Roy C., to Continental Oil Company. Sulfonate water flood additives and method of using same. 4,058,467, Cl. 252-8.55D.
Sid Richardson Carbon & Gasoline Co.: *See*—
Ruble, Theodore A., 4,058,590, Cl. 423-449.000.
Siebel, Georg: *See*—
Gruber, Carl F.; and Siebel, Georg, 4,058,701, Cl. 219-270.000.
Siebert, Werner: *See*—
Bellenberg, Heinz; Kucharzyk, Werner; Rohde, Wolfgang; and Siebert, Werner, 4,058,230, Cl. 214-18.200.
Siemens Aktiengesellschaft: *See*—
Anders, Wilfried, 4,058,445, Cl. 204-192.0SP.
Meyer, Rudolf; Schiegl, Wolf-Eberhard; and Taumann, Leonhard, 4,058,730, Cl. 250-397.000.
Muller, Karl-Heinz; Munchmeyer, Walter; von Rauch, Moriz; and Schafer, Norbert, 4,058,731, Cl. 250-442.000.
Nagel, Artur; and Wissaert, Roland, 4,058,684, Cl. 179-18.0BB.
Reiss, Karl Hans; Kotschak, Otto; and Conrad, Bernhard, 4,058,721, Cl. 250-213.0VT.
Schuster-Woldan, Hans; Weingand, Kaspar; and Koch, Dirk, 4,058,432, Cl. 156-659.000.
Soldner, Richard, 4,058,114, Cl. 128-2.00V.
Stahl, Horst; and Thorand, Franz, 4,058,355, Cl. 312-241.000.
Tippner, Franz, 4,058,735, Cl. 250-551.000.
Udvardi-Lakos, Janos, 4,058,738, Cl. 307-66.000.
Sievertsson, Hans; Lundin, Ronny Hugo Loritz; and Sjodahl, Gertrud Elisabeth Westin, to AB Kabi. Synthetic peptides having growth promoting activity. 4,058,512, Cl. 260-112.50R.
Silbert, Jerome A. Method and apparatus for sterile handling of fluids. 4,058,363, Cl. 21-58.000.
Silverman, Daniel; and Fort, J. Robert, to Geophysical Systems Corporation. Method and apparatus for transmitting geophone signals over cables with minimum noise. 4,058,790, Cl. 340-15.5TS.
Simmons, James R.; and Rogowski, Robert P., to Interlake, Inc. Strap dispensing system. 4,058,270, Cl. 242-105.000.
Simmons, Willis H. Water faucet tool means. 4,058,030, Cl. 81-53.00R.
Simon, Sidney: *See*—
Roe, Forrest D.; and Simon, Sidney, 4,058,333, Cl. 292-172.000.
Simoneit, Gunter: *See*—
Ries, Karl; Hannoschock, Kurt; and Simoneit, Gunter, 4,058,000, Cl. 73-644.000.
Simpson, Norman K. Mechanical actuation simulator. 4,058,026, Cl. 74-577.00R.
Sinclair, Robert A., to Minnesota Mining and Manufacturing Company. Protection of metals or metal containing articles. 4,058,362, Cl. 21-2.50R.
Singer Company, The: *See*—
Dunn, Earl F.; Erskine, Henry; and Hooper, Edward, 4,058,071, Cl. 112-235.000.
Eisenberg, Robert M., 4,057,913, Cl. 35-12.00B.
Singer, Erich: *See*—
Drews, Ulrich; Kraus, Bernd; Singer, Erich; and Schnurle, Hans, 4,058,106, Cl. 123-198.0DB.
Singer, Evelyn R. Multiple clothes hanging device. 4,058,222, Cl. 211-118.000.
Singh, Prithipal, to Syva Company. Tegretol antigens and antibodies. 4,058,511, Cl. 260-112.00B.
Sjodahl, Gertrud Elisabeth Westin: *See*—
Sievertsson, Hans; Lundin, Ronny Hugo Loritz; and Sjodahl, Gertrud Elisabeth Westin, 4,058,512, Cl. 260-112.50R.
Skvortsova, Elena Konstantinovna: *See*—
Ovchinnikov, Viktor Georgievich; Noritsa, Nadezhda Petrovna; Grib, Maria Mefodievna; Kamennov, Nikolai Alexandrovich; and Skvortsova, Elena Konstantinovna, 4,058,618, Cl. 424-273.00R.
Sletzinger, Meyer: *See*—
Cama, Lovji D.; Christensen, Burton G.; Karady, Sandor; and Sletzinger, Meyer, 4,058,661, Cl. 544-21.000.
Slongo, Gastone: *See*—
Glatti, Flaviano; and Slongo, Gastone, 4,058,471, Cl. 252-63.500.

Smith, Darrell Franklin, Jr.: *See*—
Eiselstein, Herbert Louis; Clatworthy, Edward Frederick; and Smith, Darrell Franklin, Jr., 4,058,416, Cl. 148-32.000.
Smith, Floyd O., to ESCO Corporation. Rotating assembly for material handling equipment. 4,058,023, Cl. 74-243.0DR.
Smith, Harvell Morton: *See*—
Faulkner, Duane Harold; Smith, Harvell Morton; and Howard, Larry Edward, 4,058,386, Cl. 65-6.000.
Smith, Herman W., to Upjohn Company, The. Aliphatic 2-decarboxy-2-hydroxymethyl-13,14-didehydro-PG compounds. 4,058,564, Cl. 260-586.00R.
Smith, Jerry D., to Cameron Iron Works, Inc. Well tool adapted to be locked within and sealed with respect to the bore of the well conduit. 4,058,162, Cl. 166-124.000.
Smith, Joe Delano; McCall, David Daniel; and Kyzer, James Alexander, to Still-Walter Tool & Manufacturing Company. Milling table lathe. 4,057,893, Cl. 29-560.000.
Smith, Stuart B.; McAlpin, James J.; Peruyero, Jose M. A.; Hazelton, Ronald L.; and Upchurch, Edward F., to Exxon Research & Engineering Co. Autorefrigeration process and apparatus. 4,058,652, Cl. 526-68.000.
Smith, William V., to Lectrolarm Custom Systems, Inc. Panoramic camera scanning system. 4,058,831, Cl. 358-87.000.
SmithKline Corporation: *See*—
DeMarinis, Robert M., 4,058,609, Cl. 424-246.000.
Ridley, Peter Tone; and Weidley, Edwin Frank, 4,058,615, Cl. 424-265.000.
Snyder, Joseph T.; and Huffman, Richard E., to Grout Supply Company. Pumpable cement grout and additive. 4,058,405, Cl. 106-87.000.
Snyder, William H.: *See*—
DeVries, Roy F.; and Snyder, William H., 4,058,644, Cl. 428-200.000.
Societa Farmaceutici Italia S.p.A.: *See*—
Arcamone, Federico; Di Marco, Aurelio; and Penco, Sergio, 4,058,519, Cl. 424-180.000.
Societa' Italiana Resine S.I.R. S.p.A.: *See*—
Piccolo, Luigi; Ghirga, Marcello; Paolinelli, Antonio; and Paganessi, Gian Pietro, 4,058,389, Cl. 71-31.000.
Societa Italiana Telecomunicazioni Siemens S.p.A.: *See*—
Delle Donne, Roberto; and Musumeci, Luigi, 4,058,682, Cl. 179-15.0AF.
Fenoglio, Francesco, 4,058,683, Cl. 179-15.0AF.
Societe Anonyme Automobiles Citroen: *See*—
Estaque, Andre F., 4,058,028, Cl. 74-865.000.
Estaque, Andre F., 4,058,029, Cl. 74-865.000.
S.A. des Anciens Etablissements Paul Wurth: *See*—
Mailliet, Pierre H.; and Metz, Jean, 4,058,300, Cl. 266-273.000.
Societe Anonyme Intersmat: *See*—
Moreaux, Claude, 4,057,998, Cl. 73-23.100.
Societe des Brevets Greffe: *See*—
Greffe, Maurice F., 4,057,949, Cl. 53-22.00B.
Societe d'Etude pour la Regeneration de l'Acide Chlorhydrique SEPRAC: *See*—
Bonnemay nee Couture, Andree; Royon, Jean; Bereau, Jean; and Catonne, Jean-Claude, 4,058,441, Cl. 204-103.000.
Societe Nationale Elf Aquitaine (Production): *See*—
de Saint Palais, Jacques; Laffont, Paul; and Mourlevat, Jean, 4,058,137, Cl. 137-236.00S.
Societe: Toscara Anstalt: *See*—
Corbic nee Busnel, Bernadette Corbic, 4,058,630, Cl. 426-36.000.
Sogge, John W., to Caterpillar Tractor Co. Track-type vehicle wheel having impact resistance means. 4,058,352, Cl. 305-57.000.
Sokolov, Boris Grigorievich; and Zaboronok, Georgy Fomich. Electron beam unit for heat treatment by electron bombardment technique. 4,058,697, Cl. 219-121.0EB.
Solarex Corporation: *See*—
Lindmayer, Joseph, 4,058,418, Cl. 148-175.000.
Solco Basel AG: *See*—
Jaeger, Karl-Heinz; and Herbrand, Willy, deceased, 4,058,534, Cl. 260-295.50S.
Soldner, Richard, to Siemens Aktiengesellschaft. Ultrasonic arrangement for puncturing internal body organs, vessels and the like. 4,058,114, Cl. 128-2.00V.
Sole, Michael John. Extracting copper from sulphide concentrates. 4,058,395, Cl. 75-72.000.
Soletanche: *See*—
Rochmann, Jacques, 4,057,969, Cl. 61-35.000.
Solosonic: *See*—
Jennings, Robert Parry; and Aaroe, Kenneth Thomas, 4,058,045, Cl. 84-1.140.
Soltesz, James A. Ship security system. 4,058,792, Cl. 340-29.000.
Sony Corporation: *See*—
Kishi, Yoshio; and Nagami, Masaru, 4,058,841, Cl. 360-27.000.
Miyaoka, Senri, 4,058,834, Cl. 358-128.000.
Mogi, Takao; Taki, Akira; and Yamazaki, Hiroshi, 4,058,772, Cl. 325-464.000.
Ohnishi, Toshinobu; Sumiya, Hiroyuki; and Suzuki, Masao, 4,058,754, Cl. 315-411.000.
Ohsawa, Mitsuo; and Yamatani, Wataru, 4,058,771, Cl. 325-446.000.
Tamura, Toshio; Oouchi, Shigeo; Oosawa, Kenji; and Fueki, Shimetomo, 4,058,439, Cl. 204-49.000.
Soto, William: *See*—
Zolke, Sarah; and Soto, William, 4,057,986, Cl. 70-233.000.
Spencer, Henry Anderson. Container for seedlings. 4,057,932, Cl. 47-77.000.
Spencer, Lloyd. Irrigation emitter. 4,058,257, Cl. 239-107.000.
Sperry Rand Corporation: *See*—
Mast, Aquila D., 4,057,954, Cl. 56-341.000.
Scheuneman, James Herman, 4,058,851, Cl. 364-900.000.
Spoor, Herbert: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Spoor, Herbert; and Lehner, August, 4,058,506, Cl. 260-75.0NP.
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Hartmann, Hans-Joerg; Spoor, Herbert; Uhl, Karl; Lehner, August; Gutermann, Winfried; and Motz, Herbert, 4,058,646, Cl. 428-425.000.
Sporri, Heinz: *See*—
Beringer, Monique; and Sporri, Heinz, 4,058,129, Cl. 131-140.00C.
Spradlin, Fred. Golf game. 4,058,313, Cl. 273-87.400.
Square Two Golf Corporation, The: *See*—
Stuff, Alfred; and Pellizzi, Anthony, 4,058,312, Cl. 273-77.00A.
Staff, Charles H.; Kunert, Gale F.; and Christians, Tom A., to Fairmont Foods Company. Meat product, and process for preparing same. 4,058,633, Cl. 426-315.000.
Stahl, Horst; and Thorand, Franz, to Siemens Aktiengesellschaft. Teleprinter console. 4,058,355, Cl. 312-241.000.
Stahl, Michael A., to Far Out Products, Ltd. Locking nut assembly. 4,057,985, Cl. 70-231.000.
Stahl, Richard F.: *See*—
Murphy, Kevin P.; Stahl, Richard F.; and Orfeo, Sabatino R., 4,057,973, Cl. 62-114.000.
Murphy, Kevin P.; Stahl, Richard F.; and Orfeo, Sabatino R., 4,057,974, Cl. 62-114.000.
Stahle, Helmut: *See*—
Kummer, Werner; Stahle, Helmut; Koppe, Herbert; Haarmann, Walter; and Reichl, Richard, 4,058,616, Cl. 424-267.000.
Stahnecker, Erhard: *See*—
Beck, Gilbert; Zuern, Ludwig; and Stahnecker, Erhard, 4,058,152, Cl. 152-310.000.
Stamires, Dennis: *See*—
Alafandi, Hamid; and Stamires, Dennis, 4,058,484, Cl. 252-455.00Z.
Standard Oil Company (Indiana): *See*—
Holda, Eugene M.; and Lark, John C., 4,058,496, Cl. 260-21.000.
Standard Telephones & Cables Limited: *See*—
Drewery, John Oliver; and Weston, Martin, 4,058,836, Cl. 358-167.000.
Stanislaw, David L., to Aradar Corporation. Dish antenna with impedance matched splash plate feed. 4,058,812, Cl. 343-761.000.
Stansbury, Roy E.; and Shotton, James A., to Phillips Petroleum Company. Water soluble rodent repellent composition for protecting a buried material such as a cable. 4,058,402, Cl. 106-16.000.
Stary, Marvin L.; Brown, Edward L.; and Pridonoff, Eric L., to Clean Air Engineering, Inc. Flammable vapor recovery system. 4,058,147, Cl. 141-45.000.
Stauffer Chemical Company: *See*—
Concilio-Nolan, Mary C.; and Chang, Pei K., 4,058,510, Cl. 260-112.00R.
Fancher, Llewellyn W., 4,058,535, Cl. 260-326.00E.
Stebinger, Albert Eugene, to TSSCO. Variably adjustable shoulder telephone handset support. 4,058,689, Cl. 179-157.000.
Steckler, Robert, to Plastomedical Sciences, Inc. Cationic hydrogels based on heterocyclic N-vinyl monomers. 4,058,491, Cl. 260-2.20R.
Steele Chemicals Co. Ltd.: *See*—
Kruger, Gunther, 4,058,539, Cl. 260-397.450.
Steffek, Robert J.: *See*—
Amor, William H., Jr.; and Steffek, Robert J., 4,057,891, Cl. 29-434.000.
Steinberg, David Herbert: *See*—
Dexter, Martin; and Steinberg, David Herbert, 4,058,502, Cl. 260-45.85B.
Steiner American Corporation: *See*—
Cassia, Antonio Macchi, 4,058,235, Cl. 221-48.000.
Steiner, Robert Henry, to Mobil Oil Corporation. Heat sealable thermoplastic films. 4,058,645, Cl. 428-331.000.
Steiner, Robert Henry, to Mobil Oil Corporation. Coating compositions and thermoplastic film substrates coated therewith. 4,058,649, Cl. 428-518.000.
Steingroever, Erich, to Elektro-Physik Hans Nix & Dr. -Ing. Erich Steingroever KG. Apparatus for automatically magnetizing permanent magnet bodies, measuring their magnetic retentivity and sorting them. 4,058,763, Cl. 324-205.000.
Steininger, Alfred: *See*—
Kuhls, Jurgen; Martini, Thomas; and Steininger, Alfred, 4,058,578, Cl. 260-884.000.
Stelling, William. Anchor assembly. 4,058,078, Cl. 114-303.000.
Stembel, Oren G. Radiograph marker. 4,058,733, Cl. 250-476.000.
Stendel, Wilhelm: *See*—
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Hammann, Ingeborg; and Stendel, Wilhelm, 4,058,603, Cl. 424-200.000.
Stephens, Richard G. Machine tool apparatus. 4,057,881, Cl. 29-27.00C.
Sterling Drug Inc.: *See*—
Bell, Malcolm R., 4,058,532, Cl. 260-288.00R.
Stern, Harold; and Elek, Stephen Dyonis. Cytomegalovirus attenuation method and vaccine. 4,058,598, Cl. 424-89.000.
Stevenson, Mayne B., to Arvey Corporation. Folded money pack envelope. 4,058,251, Cl. 229-72.000.
Still-Walter Tool & Manufacturing Company: *See*—
Smith, Joe Delano; McCall, David Daniel; and Kyzer, James Alexander, 4,057,893, Cl. 29-560.000.
Stingl, Hans Alfred; and Elliott, John, to Toms River Chemical Corporation. Metallized phenyl-azo-naphthol compounds. 4,058,515, Cl. 260-151.000.

Stoddard, Xerxes T.; and Terry, Ruel C. Heating mine water for recovery of immobile hydrocarbons. 4,058,164, Cl. 166-303.000.
Stode, Ralph A., to Continental Oil Company. Contamination trap for pressure gauges. 4,058,015, Cl. 73-395.000.
Stolfa, Frank, to UOP Inc. Combination process for producing high quality metallurgical coke. 4,058,451, Cl. 208-97.000.
Stone, Irwin. Low temperature vapor phase sterilization and storage of biologically active injectable materials. 4,058,213, Cl. 206-524.400.
Stout, Karl J., to Raytheon Company. Gamma camera with reflectivity mask. 4,058,727, Cl. 250-363.00R.
Stover, S. Dalton: *See*—
Dalton, James H.; Stover, S. Dalton; and Roney, Robert M., 4,058,740, Cl. 307-116.000.
Strater, William H.: *See*—
Mitchell, Roger; and Strater, William H., 4,058,823, Cl. 354-354.000.
Streubel, Hans; Backhaus, Karl; and John, Wolfgang, to Concast Incorporated New York. Guiding and supporting means for continuously cast metal strand. 4,058,154, Cl. 164-82.000.
Struewing, Barbara C., administratrix: *See*—
Higgins, Larry; King, John Thomas; Butler, Blondie; and Struewing, Francis R., deceased, 4,057,860, Cl. 5-247.000.
Struewing, Francis R., deceased: *See*—
Higgins, Larry; King, John Thomas; Butler, Blondie; and Struewing, Francis R., deceased, 4,057,860, Cl. 5-247.000.
Stuart, Alistair J.; and Burch, James B., to Hugh J. Baker & Company. Scaffold. 4,058,184, Cl. 182-128.000.
Studt, William Lyon: *See*—
Douglas, George Henry; Studt, William Lyon; and Dodson, Stuart Alan, 4,058,557, Cl. 260-501.140.
Stuff, Alfred; and Pellizzi, Anthony, to Square Two Golf Corporation, The. Golf club. 4,058,312, Cl. 273-77.00A.
Stupay, Lawrence John; and Truesdell, Carl Frederick, to Bunker Ramo Corporation. Pulse counter. 4,058,118, Cl. 128-2.05T.
Stutelberg, Kenneth R.; and Anderson, Dennis C., to National Polymers, Inc. Stackable flower pot. 4,057,931, Cl. 47-66.000.
Suchsland, Helmut: *See*—
Haschke, Heinz; Schreyer, Gerd; Schwarze, Werner; and Suchsland, Helmut, 4,058,662, Cl. 544-208.000.
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Yonemitsu, Eiichi; Sugio, Akitoshi; Kuramoto, Atuo; and Urabe, Hiroyuki, 4,058,504, Cl. 260-47.0ET.
Sullivan, Peter; and Yackel, John P., to American Guidance Service, Inc. Display device. 4,058,327, Cl. 281-33.000.
Sumitomo Chemical Company, Limited: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,058,622, Cl. 424-308.000.
Shiraishi, Tatsuo; Shimizu, Shinkichi; and Ichihashi, Hiroshi, 4,058,547, Cl. 260-465.300.
Sumitomo Heavy Industries, Ltd.: *See*—
Sato, Yoshimasa; Tsukuda, Toshio; Inoue, Hajime; and Mutsuta, Akio, 4,057,978, Cl. 62-331.000.
Sumitomo Metal Industries Ltd.: *See*—
Ito, Yoshinori; Kawai, Masaaki; and Ikeda, Masahiko, 4,058,700, Cl. 219-137.00R.
Matsuoka, Takashi, 4,058,414, Cl. 148-12.00F.
Sato, Yoshimasa; Tsukuda, Toshio; Inoue, Hajime; and Mutsuta, Akio, 4,057,978, Cl. 62-331.000.
Tsujimoto, Kenichi; Ikeuchi, Yoshiharu; and Kuriyama, Akira, 4,058,017, Cl. 73-423.00R.
Sumiya, Hiroyuki: *See*—
Ohnishi, Toshinobu; Sumiya, Hiroyuki; and Suzuki, Masao, 4,058,754, Cl. 315-411.000.
Summo, Arthur M., to Branson Ultrasonics Corporation. Method of joining non-fusible workpieces using frictional energy. 4,058,421, Cl. 156-73.500.
Sun Oil Company of Pennsylvania: *See*—
Hansel, William B., 4,058,149, Cl. 141-301.000.
Sun Shipbuilding & Dry Dock Company: *See*—
Shakshober, MacLean C.; Schorsch, Eugene; and Atkinson, Paul E., 4,058,227, Cl. 214-13.000.
Sun Ventures, Inc.: *See*—
Cassar, Richard D., 4,058,605, Cl. 424-212.000.
Sundberg, Borje Erling Ingvar, to Nordisk Kartro Aktiebolag. Clinchnail. 4,058,048, Cl. 85-31.000.
Suntech, Inc.: *See*—
Hill, William L., 4,057,967, Cl. 61-1.00R.
Suntola, Tuomo; and Antson, Jorma. Method for producing compound thin films. 4,058,430, Cl. 156-611.000.
Sunwall Incorporated: *See*—
Gramm, Ronald J., 4,058,109, Cl. 126-270.000.
Suovaniemi, Osmo Antero. Apparatus for accurate pipetting of small liquid volumes. 4,058,370, Cl. 23-259.000.
Sutherland, Thomas H.: *See*—
Serratore, Joseph; King, Laurence F.; Sutherland, Thomas H.; and Wallace, James R., 4,058,495, Cl. 260-17.00A.
Sutter, Hubert; and Peuker, Reinhard, to Bayer Aktiengesellschaft. Process for the bulk polymerization of α-olefins. 4,058,654, Cl. 526-159.000.
Suzuki Iron Works Co., Ltd.: *See*—
Suzuki, Masakazu, 4,057,884, Cl. 407-89.000.
Suzuki, Masakazu, to Suzuki Iron Works Co., Ltd. Tool holder. 4,057,884, Cl. 407-89.000.
Suzuki, Masao: *See*—
Ohnishi, Toshinobu; Sumiya, Hiroyuki; and Suzuki, Masao, 4,058,754, Cl. 315-411.000.
Suzuki, Takao; and Ogita, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combuston engine with auxiliary combustion chamber. 4,058,090, Cl. 123-32.0SP.
Svarz, Jerry J., to Nalco Chemical Company. Removal of color from paper mill waste waters. 4,058,458, Cl. 210-52.000.
Svensson, Christer Martinus; Lundkvist, Leif Sigurd; Lundstrom, Kurt Ingemar; and Shivaraman, Madurai Somanathan, to Semiconductor Sensors, Inc. Hydrogen detector. 4,058,368, Cl. 23-254.00E.
Swiss Fabricating, Inc.: *See*—
Lienhard, Robert W., 4,057,943, Cl. 52-126.000.
Swoager, Jon R., to Automation Equipment, Inc. Hydrostatic bearing piston for a two-cycle engine. 4,058,104, Cl. 123-193.0CP.
Sycor, Inc.: *See*—
Rempel, William D., 4,058,196, Cl. 197-133.00R.
Syva Company: *See*—
Singh, Prithipal, 4,058,511, Cl. 260-112.00B.
Szeberenyi, Szabolcs: *See*—
Kekesy, Tibor; Szeberenyi, Szabolcs; Beer, Gyorgy; Dudas, Antal; Hajos, Gyorgy; Szporny, Laszlo; and Czajlik, Eva, nee Csizer, 4,058,522, Cl. 260-239.570.
Szepesi, Istvan: *See*—
Zsolnai, Tibor; Lugosi, Gyorgy; Szepesi, Istvan; Bakonyi, Maria; Racz, Istvan; and Radvany nee Hegedus, Erzsebet, 4,058,608, Cl. 424-226.000.
Szporny, Laszlo: *See*—
Kekesy, Tibor; Szeberenyi, Szabolcs; Beer, Gyorgy; Dudas, Antal; Hajos, Gyorgy; Szporny, Laszlo; and Czajlik, Eva, nee Csizer, 4,058,522, Cl. 260-239.570.
T. D. Williamson, Inc.: *See*—
Rankin, William J., 4,058,142, Cl. 138-89.000.
Tadano Ironworks Co., Ltd.: *See*—
Shinohara, Shinitsu; Uchino, Hisanori; and Yamaji, Hiroyuki, 4,058,178, Cl. 177-146.000.
Tagaya, Mikio: *See*—
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, 4,058,736, Cl. 250-573.000.
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, 4,058,737, Cl. 250-573.000.
Tagaya, Ryosaku: *See*—
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, 4,058,736, Cl. 250-573.000.
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, 4,058,737, Cl. 250-573.000.
Taira, Kaoru; Sato, Teruo; Ishii, Yoshiya; Miyata, Yukinori; and Okamoto, Katashi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Control apparatus for diesel engine. 4,058,101, Cl. 123-140.0MP.
Takada, Takezo, to Takata Kojyo Co., Ltd. Inertia locked safety belt take-up reel. 4,058,272, Cl. 242-107.40B.
Takagi, Tokuichi: *See*—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, 4,058,665, Cl. 560-121.000.
Takahara, Yoshimasa: *See*—
Futai, Norio; Murakami, Toshio; Takahara, Yoshimasa; and Kumazawa, Toshiharu, 4,058,481, Cl. 252-321.000.
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, to Eisai Co., Ltd. Method and apparatus for inspecting extraneous solid substances contained in liquid. 4,058,736, Cl. 250-573.000.
Takahashi, Toshio; Ehara, Toshiyasu; Tagaya, Ryosaku; and Tagaya, Mikio, to Eisai Co., Ltd. Method and apparatus for detecting extraneous solid substances contained in liquid. 4,058,737, Cl. 250-573.000.
Takaku, Sakae: *See*—
Mori, Takashi; Takaku, Sakae; Oi, Nobuhiro; Shindo, Minoru; Hirano, Takeaki; Kataoka, Shigeyuki; and Furuno, Kouji, 4,058,523, Cl. 544-165.000.
Takamaru, Takeshi: *See*—
Kohno, Takashige; Takamaru, Takeshi; Kuwahara, Akiyasu; and Mori, Michitsugu, 4,058,093, Cl. 123-75.00B.
Takara Co., Ltd.: *See*—
Ogawa, Iwakichi, 4,057,929, Cl. 46-201.000.
Takashina, Naomitsu: *See*—
Ko, Keiun; Takashina, Naomitsu; Shimizu, Senzo; Ikegami, Masuya; and Iwamoto, Yoshinori, 4,058,497, Cl. 260-22.00A.
Takata Kojyo Co., Ltd.: *See*—
Takada, Takezo, 4,058,272, Cl. 242-107.40B.
Takechi, Hiroshi; Abe, Mitsunobu; Katsutani, Ryoseki; and Saito, Yoshio, to Nippon Steel Corporation. Method for levelling a metal strip or sheet. 4,057,989, Cl. 72-128.000.
Takeda, Keiji: *See*—
Murata, Masataka; Takeda, Keiji; and Ikeda, Teppei, 4,058,443, Cl. 204-159.170.
Taki, Akira: *See*—
Mogi, Takao; Taki, Akira; and Yamazaki, Hiroshi, 4,058,772, Cl. 325-464.000.
Tamaki, Hiroshi: *See*—
Awane, Katunobu; Hattori, Hironori; Biwa, Tetuo; and Tamaki, Hiroshi, 4,058,822, Cl. 357-23.000.
Tamburin, Gino: *See*—
Abbruzzese, Luigi; Gozzo, Franco; Rossi, Giorgio; Masoero, Marcella; Lorusso, Simone; Bonola, Paola; and Tamburin, Gino, 4,058,613, Cl. 424-258.000.

Tamura, Toshinari: *See*—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, 4,058,665, Cl. 560-121.000.

Tamura, Toshio; Oouchi, Shigeo; Oosawa, Kenji; and Fueki, Shimetomo, to Sony Corporation. Nickel electroplating bath for satin finish and method. 4,058,439, Cl. 204-49.000.

Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine of a lean air-fuel mixture combustion type. 4,058,091, Cl. 123-32.0VN.

Tanaka, Eizi; and Mochizuki, Hiroshi, to Nippon Soken, Inc. Intake air flow rate measuring device for internal combustion engine. 4,058,100, Cl. 123-139.0AW.

Tanaka, Hitoshi: *See*—
Fujiwara, Shinobu; and Tanaka, Hitoshi, 4,058,404, Cl. 106-73.310.

Tappan, Leonard E. Car top load carrier. 4,058,243, Cl. 224-42.10H.

Taradonov, Vladimir Ignatievich: *See*—
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.

Tarasov, Evgeny Alexandrovich: *See*—
Prutkovsky, Evgeny Nikolaevich; Bermatov, Mikhail Albertovich; Tarasov, Evgeny Alexandrovich; Ozerov, Valery Ilich; Fedosjuk, Alexandr Fedorovich; and Krokhin, Vladimir Andreevich, 4,057,966, Cl. 60-678.000.

Tashiro, Sadaji; and Kuroi, Yasuyuki, to Hitachi Metals, Ltd. Full rotation type, sheet web shearing machine. 4,058,037, Cl. 83-70.000.

Taumann, Leonhard: *See*—
Meyer, Rudolf; Schiegl, Wolf-Eberhard; and Taumann, Leonhard, 4,058,730, Cl. 250-397.000.

Taylor, Don A., to Buehrle, Victor E. Apparatus for bonding treads to tires. 4,058,422, Cl. 156-96.000.

Taylor, Henry F., to United States of America, Navy. Electro-optic analog/digital converter. 4,058,722, Cl. 250-225.000.

Taylor, Michael J.; and Isley, John P. Movement indicator. 4,058,079, Cl. 116-114.00H.

TDK Electronics Co., Ltd.: *See*—
Fujiwara, Shinobu; and Tanaka, Hitoshi, 4,058,404, Cl. 106-73.310.

Teijin Limited: *See*—
Kawashima, Kohei; Ikeno, Keiji; and Nakanishi, Hajime, 4,058,264, Cl. 242-18.0PW.
Omoto, Yorihiko; Konishi, Tadashi; Ichihara, Shigehiro; and Murai, Hisanori, 4,058,507, Cl. 260-75.00M.
Tsuyuguchi, Tadao, 4,058,216, Cl. 206-597.000.

Tekken Kensetu Co. Ltd.: *See*—
Yamazaki, Hironobu, 4,057,971, Cl. 61-84.000.

Telefonaktiebolaget L M Ericsson: *See*—
Hedlund, Per Olov; and Hertsius, Lars Olof, 4,058,265, Cl. 242-47.010.
Johansson, Sven Torild Kruse, 4,058,673, Cl. 178-22.000.

Tenhunen, Lauri Alarik. Apparatus for detaching a portion of a body of material such as hay. 4,058,038, Cl. 83-109.000.

Terasaki, Daijiro: *See*—
Idzutsu, Waichiro; Kuroki, Masaaki; Komukai, Shigeru; Terasaki, Daijiro; and Nakajima, Sachie, 4,058,376, Cl. 55-70.000.

Terry, Ruel C.: *See*—
Stoddard, Xerxes T.; and Terry, Ruel C., 4,058,164, Cl. 166-303.000.

Terumoto, Masahiro, to Q. P Corporation. High-pressure thermal sterilizer having liquid recirculating means. 4,058,364, Cl. 21-80.000.

Terzian, Rouben T., to Marvin Glass & Associates. Articulated doll. 4,057,928, Cl. 46-120.000.

Texaco Exploration Canada Ltd.: *See*—
Patel, Mahendra S.; and Sacuta, Aleksy, 4,058,453, Cl. 208-188.000.

Texaco Inc.: *See*—
Kablaoui, Mahmoud S., 4,058,472, Cl. 252-89.00B.
Kablaoui, Mahmoud S., 4,058,540, Cl. 260-405.000.
Kablaoui, Mahmoud S., 4,058,541, Cl. 260-405.000.

Texas Instruments Incorporated: *See*—
Hutton, Allen H.; and Armstrong, James J., III, 4,058,097, Cl. 123-119.00F.
Morton, Dale E., 4,058,638, Cl. 427-39.000.

Theaker, Reginald: *See*—
Hurt, Francis Neil; Theaker, Reginald; and Plant, David Herbert, 4,058,245, Cl. 226-174.000.

Theeuwes, Felix; and Ayer, Atul D., to Alza Corporation. Osmotic system with laminated wall formed of different materials. 4,058,122, Cl. 128-260.000.

Thiel, James L.: *See*—
Kelsey, Amos P.; Palumbo, John A.; and Thiel, James L., 4,057,990, Cl. 72-166.000.

Thiel, Reinhard; and Rosenbaum, Heinz Jorg, to Bayer Aktiengesellschaft. Process for oxidizing hydrocarbons. 4,058,565, Cl. 260-586.0AB.

Thillet, Georges: *See*—
Denoor, Gaston; and Thillet, Georges, 4,058,278, Cl. 242-7.220.

Thiodet, Alain: *See*—
Antier, Georges; and Thiodet, Alain, 4,058,696, Cl. 219-10.770.

Thomas, Robert Edward: *See*—
Thomas, Robert Melvin; and Thomas, Robert Edward, 4,058,318, Cl. 273-134.0AD.
Thomas, Robert Melvin; and Thomas, Robert Edward, 4,058,319, Cl. 273-134.0AD.

Thomas, Robert Melvin; and Thomas, Robert Edward. Multi-player backgammon. 4,058,318, Cl. 273-134.0AD.

Thomas, Robert Melvin; and Thomas, Robert Edward. Multi-player backgammon. 4,058,319, Cl. 273-134.0AD.

Thomas, Rudolf; Kramer, Wolfgang; Eue, Ludwig; Metzger, Carl; and Jager, Gerhard, to Bayer Aktiengesellschaft. Tetrasubstituted urea compounds and herbicidal compositions. 4,058,392, Cl. 71-106.000.

Thompson, John R., to Control Data Corporation. TV monitor. 4,058,829, Cl. 358-84.000.

Thompson, Robert L.: *See*—
Wilkes, Arthur L.; Wade, Fred B.; and Thompson, Robert L., 4,058,676, Cl. 179-1.0SA.

Thorand, Franz: *See*—
Stahl, Horst; and Thorand, Franz, 4,058,355, Cl. 312-241.000.

Thorne, Richard L., to Zenith Radio Corporation. Bidirectional channel skipping tuner drive system with single pole programming switch. 4,058,756, Cl. 318-265.000.

Thrun, James L., to A-T-O Inc. Inhalant disperser. 4,058,425, Cl. 156-200.000.

Tiberg, Magnus Gustav Georg, to Ingenjorsfirman R. Ohrnell AB. Device for the removal of castings from chill moulds. 4,058,156, Cl. 164-405.000.

Tindall, Colin Edward: *See*—
Blom, Johannes Cornelis; and Tindall, Colin Edward, 4,058,158, Cl. 165-9.000.

Tinney, Francis John, to Parke, Davis & Company. Pentapeptides and methods for their production. 4,058,513, Cl. 260-112.5LH.

Tippner, Franz, to Siemens Aktiengesellschaft. Opto-electronic contact mechanism. 4,058,735, Cl. 250-551.000.

Tocco-Stel: *See*—
Antier, Georges; and Thiodet, Alain, 4,058,696, Cl. 219-10.770.

Tokiguchi, Katsumi: *See*—
Sakudo, Noriyuki; Tokiguchi, Katsumi; and Kanomata, Ichiro, 4,058,748, Cl. 313-156.000.

Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, to Tokyo Shibaura Electric, Co., Ltd. Method of manufacturing integrated injection logic semiconductor devices utilizing self-aligned double-diffusion techniques. 4,058,419, Cl. 148-175.000.

Tokunaga, Michio; Ohhinata, Ichiro; and Okuhara, Shinzi, to Hitachi, Ltd. Semiconductor switch circuit. 4,058,741, Cl. 307-252.00G.

Tokunaga, Tetsuya: *See*—
Funabiki, Kyohei; and Tokunaga, Tetsuya, 4,058,403, Cl. 106-56.000.

Tokyo Gas Co., Ltd.: *See*—
Idzutsu, Waichiro; Kuroki, Masaaki; Komukai, Shigeru; Terasaki, Daijiro; and Nakajima, Sachie, 4,058,376, Cl. 55-70.000.

Tokyo Shibaura Electric, Co., Ltd.: *See*—
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,058,419, Cl. 148-175.000.

Tolle, Russell W. Rubber covered cable. 4,057,956, Cl. 57-164.000.

Tomaszewski, Jerry James: *See*—
Dano, Arnold Vincent; Tomaszewski, Jerry James; and Friedrichs, Jerome Peter, 4,058,744, Cl. 310-343.000.

Tomioka, Kenichi: *See*—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, 4,058,665, Cl. 560-121.000.

Toms River Chemical Corporation: *See*—
Stingl, Hans Alfred; and Elliott, John, 4,058,515, Cl. 260-151.000.

Tootal Limited: *See*—
Wild, Kenneth, 4,057,864, Cl. 8-2.50R.

Torongo, Albert Henry, to Borden, Inc. Display device with overlapping cards. 4,058,220, Cl. 211-57.100.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Habu, Nobuo, 4,058,095, Cl. 123-117.00R.
Kawaguchi, Hiroshi; and Nishikawa, Kohji, 4,058,084, Cl. 188-71.800.
Morisawa, Kunio; Minemoto, Isamu; and Kyushima, Tatsuo, 4,058,193, Cl. 192-109.00F.
Onaka, Hidemi, 4,058,098, Cl. 123-119.00A.
Saito, Taiji, 4,058,099, Cl. 123-122.00D.
Suzuki, Takao; and Ogita, Hiroshi, 4,058,090, Cl. 123-32.0SP.
Taira, Kaoru; Sato, Teruo; Ishii, Yoshiya; Miyata, Yukinori; and Okamoto, Katashi, 4,058,101, Cl. 123-140.0MP.
Tanahashi, Toshio, 4,058,091, Cl. 123-32.0VN.

Traiteur, Rene, to Babcock & Wilcox Limited. Steam dryers. 4,058,381, Cl. 55-444.000.

Trautwein, Robert. Foldable kayak. 4,057,865, Cl. 9-2.00F.

Tree Island Steel Co. Ltd.: *See*—
Kaye, Sidney P., 4,057,878, Cl. 24-134.00R.

Trenschel, Donald R.; and Eitel, Frederick G., to United States of America, Air Force. Adjustable pintle spray manifold assembly. 4,058,263, Cl. 239-551.000.

Trentz, Henry P.: *See*—
Rohrberg, Rod G.; Trentz, Henry Patrick; and Ziegler, Victor Herbert, 4,057,935, Cl. 49-56.000.

Trentz, Henry Patrick: *See*—
Rohrberg, Rod G.; Trentz, Henry Patrick; and Ziegler, Victor Herbert, 4,057,935, Cl. 49-56.000.

Trepaud, Georges. Heat exchanger. 4,058,161, Cl. 165-158.000.

Triangle Package Machinery Company: *See*—
Puccetti, Ralph P.; and Klopfenstein, King L., 4,058,268, Cl. 242-72.00R.
Triplett, James Thomas. Lifting mechanism for trucks. 4,058,229, Cl. 214-77.00R.
Trochme, Martine: *See*—
Debourge, Jean-Claude; and Trochme, Martine, 4,058,600, Cl. 424-128.000.
Trott, David H., to Crossbow, Inc. Meat thermometer. 4,058,013, Cl. 73-352.000.
Trotta, Robert A., to Gillette Company, The. Razor handle. 4,057,896, Cl. 30-89.000.
Truesdell, Carl Frederick: *See*—
Stupay, Lawrence John; and Truesdell, Carl Frederick, 4,058,118, Cl. 128-2.05T.
TSSCO: *See*—
Stebinger, Albert Eugene, 4,058,689, Cl. 179-157.000.
Tsujimoto, Kenichi; Ikeuchi, Yoshiharu; and Kuriyama, Akira, to Sumitomo Metal Industries Ltd. Automatic probe feeding, setting and withdrawing apparatus. 4,058,017, Cl. 73-423.00R.
Tsukamoto, Kotaro. Rectifying equipment of bar material. 4,057,988, Cl. 72-98.000.
Tsukuda, Toshio: *See*—
Sato, Yoshimasa; Tsukuda, Toshio; Inoue, Hajime; and Mutsuta, Akio, 4,057,978, Cl. 62-331.000.
Tsuyuguchi, Tadao, to Teijin Limited. Device for packing roll-like articles. 4,058,216, Cl. 206-597.000.
Tuegel, Robert O., to Wagner Electric Corporation. Master cylinder reservoir with vacuum relief diaphragm and guarded fluid level sensor. 4,058,694, Cl. 200-84.00C.
Turner, Peter G.: *See*—
Evans, Albert E. J.; and Turner, Peter G., 4,058,632, Cl. 426-126.000.
Ubukata, Susumu; Mizutani, Yasukazu; Iyoda, Syozo; and Aoi, Hiroshi, to Ubukata, Susumu. Emergency locking retractor for seat belt assemblies. 4,058,271, Cl. 242-107.40B.
Uchino, Hisanori: *See*—
Shinohara, Shinitsu; Uchino, Hisanori; and Yamaji, Hiroyuki, 4,058,178, Cl. 177-146.000.
Udvardi-Lakos, Janos, to Siemens Aktiengesellschaft. Method and circuit arrangement for starting up a converter having forced commutation with the correct phase. 4,058,738, Cl. 307-66.000.
Uehlinger, Hanspeter, to Sandoz Ltd. Asymmetric 1:2 chromium complexes of monoazo compounds having 1-aryl-3-methyl-pyrazolone-5 coupling components. 4,058,514, Cl. 260-145.00B.
Uehlinger, Hanspeter: *See*—
Mislin, Roland; and Uehlinger, Hanspeter, 4,058,516, Cl. 260-152.000.
Ueno, Sadayasu: *See*—
Ichikawa, Norio; and Ueno, Sadayasu, 4,058,787, Cl. 338-22.00R.
Uhl, Karl: *See*—
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Hartmann, Hans-Joerg; Spoor, Herbert; Uhl, Karl; Lehner, August; Gutermann, Winfried; and Motz, Herbert, 4,058,646, Cl. 428-425.000.
Umarji, Sudhindra R.: *See*—
Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., 4,058,672, Cl. 178-3.000.
Crager, William C.; Umarji, Sudhindra R.; Griffin, Robert H.; and Louit, Gerard J., 4,058,838, Cl. 358-257.000.
Undin, Hans, to Pressmaster, Ltd. Hand operated gripping apparatus. 4,057,993, Cl. 72-410.000.
Union Carbide Corporation: *See*—
Cheung, Harry, 4,058,485, Cl. 252-466.0PT.
D'Silva, Themistocles D. J., 4,058,549, Cl. 260-465.400.
Lashway, Robert William, 4,058,579, Cl. 264-81.000.
Prokai, Bela; and Kanner, Bernard, 4,058,493, Cl. 260-2.5AH.
Prokai, Bela; and Kanner, Bernard, 4,058,494, Cl. 260-2.5AH.
Quets, Jean Marie Louis Joseph, 4,058,592, Cl. 423-594.000.
Yen, Steven N.; and Osterholtz, Frederick D., 4,058,124, Cl. 128-284.000.
Uniroyal, Inc.: *See*—
Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., 4,058,568, Cl. 260-607.0AR.
Unisearch Limited: *See*—
Vaughan, Richard; and Cole, Peter Harold, 4,058,217, Cl. 209-74.00M.
United States Borax & Chemical Corporation: *See*—
Brown, Clifford Gordon; and Sanderson, Brian Robert, 4,058,588, Cl. 423-283.000.
United States of America
Administrator, Environmental Protection Agency: *See*—
Vrolyk, John J.; and Melvold, Robert W., 4,058,234, Cl. 220-239.000.
Air Force: *See*—
Brown, Herbert R., 4,058,276, Cl. 244-152.000.
Hasinger, Siegfried H.; and Miller, David K., 4,058,141, Cl. 138-39.000.
Koonce, George W., 4,0[illegible]331, Cl. 292-97.000.
Moran, Thomas J., 4,058,002, Cl. 73-620.000.
Ostendorf, Edward M., 4,057,899, Cl. 30-296.00R.
Trenschel, Donald R.; and Eitel, Frederick G., 4,058,263, Cl. 239-551.000.
Vroombout, Leo O., 4,058,734, Cl. 250-495.000.
Welch, Bryant M.; and Pashley, Richard D., 4,058,413, Cl. 148-1.500.
Army: *See*—
Dukic, Ferdinando V., 4,058,060, Cl. 102-8.000.
Russell, William J., 4,058,438, Cl. 204-1.00T.
Commerce: *See*—
Miettinen, Seppo I., 4,058,310, Cl. 273-63.00E.
Health, Education and Welfare: *See*—
Beisler, John A.; Abbasi, Mohamed M.; and Driscoll, John S., 4,058,602, Cl. 424-180.000.
Ito, Yoichiro, 4,058,460, Cl. 210-198.00C.
Interior: *See*—
Clites, Philip G., 4,058,668, Cl. 13-32.000.
Navy: *See*—
Banks, Clarence K.; Crout, Prescott D.; and Homer, Paul B., 4,058,275, Cl. 244-3.150.
Hurst, William M., 4,058,063, Cl. 102-56.0SC.
Petrisko, Edwin M., 4,058,301, Cl. 267-124.000.
Taylor, Henry F., 4,058,722, Cl. 250-225.000.
Zirino, Alberto; Clavell, Cesar; and Huey, Kent, 4,058,446, Cl. 204-195.00R.
Transportation: *See*—
Vrabel, Joseph D.; and Gosselin, Dennis W., 4,057,904, Cl. 33-125.00R.
U.S. Philips Corporation: *See*—
Armstrong, Desmond Ross, 4,058,743, Cl. 307-275.000.
Bonis, Maurice; and Roger, Bernard, 4,058,825, Cl. 357-46.000.
Mulder, Jan, 4,058,382, Cl. 62-6.000.
United Technologies Corporation: *See*—
Baris, Johannes M.; Iacovangelo, Charles D.; and Vogel, Wolfgang M., 4,058,482, Cl. 252-425.300.
Jacoby, Herbert; and Mendelsohn, Arnold, 4,058,187, Cl. 187-29.00R.
University of California, The Regents of the: *See*—
Evans, David A., 4,058,567, Cl. 260-607.00A.
University of Edinburgh, The University Court of the: *See*—
Jones, Robert L., 4,058,664, Cl. 560-121.000.
University of Melbourne, The: *See*—
McLaughlin, Robert Joseph William, 4,058,393, Cl. 75-1.00T.
University of Notre Dame du Lac: *See*—
D'Alelio, Gaetano Francis, 4,058,505, Cl. 260-47.0CP.
UOP Inc.: *See*—
Asselin, George F., 4,058,454, Cl. 208-321.000.
Loboda, Robert S., 4,058,452, Cl. 208-134.000.
Martan, Michael, 4,058,566, Cl. 260-600.00R.
Stolfa, Frank, 4,058,451, Cl. 208-97.000.
Upchurch, Edward F.: *See*—
Smith, Stuart B.; McAlpin, James J.; Peruyero, Jose M. A.; Hazelton, Ronald L.; and Upchurch, Edward F., 4,058,652, Cl. 526-68.000.
Upjohn Company, The: *See*—
Morozowich, Walter, 4,058,551, Cl. 560-43.000.
Richter, Reinhard H., 4,058,563, Cl. 260-566.00F.
Salmond, William G., 4,058,538, Cl. 260-397.200.
Smith, Herman W., 4,058,564, Cl. 260-586.00R.
Urabe, Hiroyuki: *See*—
Yonemitsu, Eiichi; Sugio, Akitoshi; Kuramoto, Atuo; and Urabe, Hiroyuki, 4,058,504, Cl. 260-47.0ET.
Urani, Angelo: *See*—
Gaia, Aldino J.; and Urani, Angelo, 4,058,786, Cl. 337-293.000.
Urselmann, Godefridus H., to Oce-van der Grinten N.V. Apparatus for copying sheet originals. 4,058,359, Cl. 355-109.000.
Ury, John M., to Wagner Electric Corporation. Pressure holding valve. 4,058,349, Cl. 303-69.000.
Utility Products Co.: *See*—
Leschinger, Matthew L., 4,058,670, Cl. 174-38.000.
Uyeo, Shoichiro; Aoki, Tsutomu; and Nagata, Wataru, to Shionogi & Co., Ltd. 2-Halomethyl-2-nucleophilic substituted methyl penicillins. 4,058,521, Cl. 260-239.100.
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Spoor, Herbert; and Lehner, August, to BASF Aktiengesellschaft. Thermoplastic, elastic polyurethanes which are soluble in ethers and/or ketones. 4,058,506, Cl. 260-75.0NP.
Vaeth, Guenter; Bachmann, Rudolf; Hartmann, Heinrich; Hartmann, Hans-Joerg; Spoor, Herbert; Uhl, Karl; Lehner, August; Gutermann, Winfried; and Motz, Herbert, to BASF Aktiengesellschaft. Magnetic recording media containing elastomeric polyurethane binders in the magnetic coating. 4,058,646, Cl. 428-425.000.
Vagi, Robert J., to Picker Corporation. Display for television imaging system. 4,058,832, Cl. 358-110.000.
Valex Inc.: *See*—
Becker, Philip S., 4,058,240, Cl. 222-368.000.
Valfells, August, to Iowa State University Research Foundation, Inc. Concurrent separation of lithium and hydrogen isotopes. 4,058,440, Cl. 204-101.000.
Valmet Oy: *See*—
Kroger, Keijo Kalevi, 4,058,183, Cl. 180-89.100.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, to C. van der Lely N. V. Soil cultivating and sowing implement. 4,058,068, Cl. 111-36.000.
van der Lely, Cornelis. Rotary harrows. 4,058,168, Cl. 172-59.000.
van der Lely, Cornelis. Mounting of soil working tines. 4,058,171, Cl. 172-713.000.
Vanderlinde, William: *See*—
Morgan, Albert W.; Shull, Charles S.; and Vanderlinde, William, 4,058,658, Cl. 526-261.000.
Vanlerberghe, Guy; and Sebag, Henri, to L'Oreal. Polyhydroxyl monosulfoxide shampoo compositions. 4,058,629, Cl. 424-365.000.

Van Mill, Michael D., to Work Horse Manufacturing Co. Gravity feed box. 4,058,239, Cl. 222-462.000.

van Vloten, Curtis P., to Arthur D. Little, Inc. Radiant zone heating apparatus and method. 4,058,699, Cl. 219-121.0LM.

Vasiliev, Alexei Vasilievich: *See—*
Muzhzhavlev, Konstantin Dmitrievich; Kosarev, Sergei Petrovich; Schegolev, Vladimir Ivanovich; Ivanov, Andrei Borisovich; Romanenko, Oleg Nikolaevich; Yazev, Vladimir Dmitrievich; and Vasiliev, Alexei Vasilievich, 4,058,448, Cl. 204-244.000.

Vasiliev, Vasily Dmitrievich: *See—*
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.

Vaughan, Richard; and Cole, Peter Harold, to Unisearch Limited. Automatic article sorting system. 4,058,217, Cl. 209-74.00M.

Velikasov, Anatoly Alexeevich: *See—*
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.

Velsicol Chemical Corporation: *See—*
Anderson, Arnold L., 4,058,501, Cl. 260-45.75B.

Videre Corporation: *See—*
Wyatt, William Burk, Jr.; and Benefield, Bruce D., 4,057,936, Cl. 49-61.000.
Wyatt, William Burk, Jr.; and Benefield, Bruce D., 4,057,944, Cl. 52-309.110.

Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladimir Ignatievich; and Isakov, Valery Pavlovich. Straightway valve. 4,058,138, Cl. 137-512.100.

Vincent, David N.; and Golden, Ronald, to Champion International Corporation. Opacified paper sheet and method for production thereof. 4,058,434, Cl. 162-165.000.

Visa, Heikki; Rantala, Ossi; and Risti, Antti, to Autolava Oy. Apparatus for moving an exchangeable platform or a container on to and off of a tipping frame of a lorry, trailer, or the like. 4,058,231, Cl. 214-516.000.

Visual Graphics Corporation: *See—*
Mitchell, Roger; and Strater, William H., 4,058,823, Cl. 354-354.000.

Vits, Hilmar, to Vits-Maschinenbau GmbH. Air cushion nozzle. 4,058,244, Cl. 226-97.000.

Vits-Maschinenbau GmbH: *See—*
Vits, Hilmar, 4,058,244, Cl. 226-97.000.

Voegeli, Otto, to International Business Machines Corporation. Field access method for bubble memories. 4,058,801, Cl. 365-39.000.

Vogel, Ronald F.; Boldt, Robert R.; McKee, Kevin D.; Resh, Roy E.; and West, Paul E., to Agridustrial Electronics, Inc. Multiple-frequency permittivity tester. 4,058,766, Cl. 324-61.00R.

Vogel, Wolfgang M.: *See—*
Baris, Johannes M.; Iacovangelo, Charles D.; and Vogel, Wolfgang M., 4,058,482, Cl. 252-425.300.

Voigt, Hermann Uwe: *See—*
Glander, Fritz; and Voigt, Hermann Uwe, 4,058,583, Cl. 264-176.00R.

Volter, Gunter: *See—*
Frohlich, Alfons; Dahlmann, Julius; and Volter, Gunter, 4,058,145, Cl. 139-384.00B.

von Bonin, Wulf; Kleimann, Helmut; and Post, Udo, to Bayer Aktiengesellschaft. Process for molding polyurethane foams. 4,058,492, Cl. 260-2.5AM.

von Rauch, Moriz: *See—*
Muller, Karl-Heinz; Munchmeyer, Walter; von Rauch, Moriz; and Schafer, Norbert, 4,058,731, Cl. 250-442.000.

Vonsimi Sales Corporation: *See—*
Wittner, Milton, 4,058,691, Cl. 200-31.00R.

Vrabel, Joseph D.; and Gosselin, Dennis W., to United States of America, Transportation. Self-adjusting string extensiometer. 4,057,904, Cl. 33-125.00R.

Vrillon, Bernard, to Commissariat a l'Energie Atomique. Mechanical shock-absorbing device. 4,058,188, Cl. 188-1.00C.

Vrolyk, John J.; and Melvold, Robert W., to United States of America, Administrator, Environmental Protection Agency. System for sealing and repairing leaks in ruptured containers. 4,058,234, Cl. 220-239.000.

Vroom, Alan H. Sulphur cements, process for making same and sulphur concretes made therefrom. 4,058,500, Cl. 260-42.240.

Vroombout, Leo O., to United States of America, Air Force. Passive infrared resolution target. 4,058,734, Cl. 250-495.000.

Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See—*
Henzl, Jindrich; Cerny, Jindrich; and Malasek, Jaromir, 4,058,143, Cl. 139-110.000.

W. Kunz AG: *See—*
Kunz, Werner, 4,058,634, Cl. 426-456.000.

W. R. Grace & Co.: *See—*
Chi, Chang Whan; Hoffman, Gordon Herman; and Eichhorn, Emil, 4,058,586, Cl. 423-118.000.
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, 4,058,527, Cl. 260-251.00R.
Gaudette, Roger Robert; Ohlson, John Leonard; and Scanlon, Patricia Marie, 4,058,528, Cl. 260-251.00R.

WABCO Westinghouse GmbH: *See—*
Reinecke, Erich, 4,058,347, Cl. 303-22.00R.

Wade, David R.; and Munch, Walter, Jr., to D. H. Baldwin Company. Key transposing electronic organ. 4,058,042, Cl. 84-1.010.

Wade, Fred B.: *See—*
Wilkes, Arthur L.; Wade, Fred B.; and Thompson, Robert L., 4,058,676, Cl. 179-1.0SA.

Wagner Electric Corporation: *See—*
Demas, Nickolas P.; Duncan, William E.; Gephart, Norman S.; and Waltz, William T. S., 4,058,749, Cl. 313-326.000.
Falk, Edward J., 4,058,136, Cl. 137-110.000.
Tuegel, Robert O., 4,058,694, Cl. 200-84.00C.
Ury, John M., 4,058,349, Cl. 303-69.000.

Wahls, Robert John, to Freedman Seating Company. Rotating seat pedestal. 4,058,282, Cl. 248-418.000.

Wakeman, Reginald L.; Dudzinski, Zdzislaw W.; and Lada, Arnold, to Millmaster Onyx Corporation. Imidazoline oxides. 4,058,488, Cl. 252-542.000.

Walker, Donny R.: *See—*
Kao, Charles T.; Lafevers, James O.; and Walker, Donny R., 4,058,706, Cl. 235-449.000.

Walker, Fred T., Jr. Food pattie molding tool. 4,057,874, Cl. 17-32.000.

Wallace, Dewey K. Magnetic radio mounting bracket. 4,058,357, Cl. 339-12.00R.

Wallace, James R.: *See—*
Serratore, Joseph; King, Laurence F.; Sutherland, Thomas H.; and Wallace, James R., 4,058,495, Cl. 260-17.00A.

Walland, Alexander: *See—*
Renth, Ernst-Otto; Mentrup, Anton; Schromm, Kurt; and Walland, Alexander, 4,058,642, Cl. 424-330.000.

Walmet, Gunnar E.: *See—*
Corman, James C.; and Walmet, Gunnar E., 4,058,160, Cl. 165-105.000.

Walski, Stanley, to Con-Spec Devices Inc. Apparatus to adjust and maintain the distance between wall forms. 4,058,285, Cl. 249-216.000.

Walter, John L., to General Electric Company. Directionally solidified cobalt-base eutectic alloys. 4,058,415, Cl. 148-32.000.

Walter, Thomas J., to Ethyl Corporation. Chemical process. 4,058,560, Cl. 260-535.00P.

Waltz, William T. S.: *See—*
Demas, Nickolas P.; Duncan, William E.; Gephart, Norman S.; and Waltz, William T. S., 4,058,749, Cl. 313-326.000.

Walworth, Bryant Leonidas: *See—*
Cross, Barrington; and Walworth, Bryant Leonidas, 4,058,391, Cl. 71-92.000.

Ware, Robert R., Jr., to Chicago Roller Skate Company. Die cast roller skate sole plate. 4,058,323, Cl. 280-11.10R.

Warner, George M.; and Andberg, Leif E., to Rank Xerox Ltd. Metering system for a copier/duplicator machine. 4,058,815, Cl. 355-14.000.

Warren, Jerry Jay: *See—*
Sachleben, Harold Gerard, Sr.; and Warren, Jerry Jay, 4,057,910, Cl. 34-227.000.

Watanabe, Mitsuo: *See—*
Hikosaka, Noboru; Watanabe, Mitsuo; and Shiozaki, Shoji, 4,058,092, Cl. 123-32.0ST.

Watanabe, Shoji: *See—*
Ohno, Tetsuo; and Watanabe, Shoji, 4,058,232, Cl. 215-217.000.

Waxman, Albert S., to G. D. Searle & Co. Ultrasound imaging system with improved scan conversion. 4,058,001, Cl. 73-620.000.

Webb, Oswald, to GKN Transmissions Limited. Control couplings. 4,058,027, Cl. 74-711.000.

Webster, George Harry: *See—*
Nutt, Wendell Glenn; and Webster, George Harry, 4,058,669, Cl. 174-34.000.

Weggeland, John H. Picture viewer with successive feed means. 4,057,920, Cl. 40-79.000.

Weidley, Edwin Frank: *See—*
Ridley, Peter Tone; and Weidley, Edwin Frank, 4,058,615, Cl. 424-265.000.

Weingand, Kaspar: *See—*
Schuster-Woldan, Hans; Weingand, Kaspar; and Koch, Dirk, 4,058,432, Cl. 156-659.000.

Welch, Bryant M.; and Pashley, Richard D., to United States of America, Air Force. Ion implantation method for the fabrication of gallium arsenide semiconductor devices utilizing an aluminum nitride protective capping layer. 4,058,413, Cl. 148-1.500.

Welton, Barry S.; Westerman, Granval W.; and Hill, Michael E., to End Devices, Inc. Well pump-off controller. 4,058,757, Cl. 318-474.000.

Wemmer, Otto. Control for sand blasting nozzle. 4,057,940, Cl. 51-438.000.

Wendel, I. L., to Lowe, James L. Solar collector. 4,058,111, Cl. 126-271.000.

Werner & Pfleiderer: *See—*
Seufert, Wilhelm, 4,058,297, Cl. 366-81.000.

Werner, Reinhold, to Klockner-Humboldt-Deutz Aktiengesellschaft. Control system for gas turbines. 4,057,960, Cl. 60-39.030.

West, Donald P., to Xerox Corporation. Ribbon tension control for a ribbon cartridge. 4,058,197, Cl. 197-151.000.

West, Paul E.: *See—*
Vogel, Ronald F.; Boldt, Robert R.; McKee, Kevin D.; Resh, Roy E.; and West, Paul E., 4,058,766, Cl. 324-61.00R.

Westerman, Granval W.: *See—*
Welton, Barry S.; Westerman, Granval W.; and Hill, Michael E., 4,058,757, Cl. 318-474.000.

Westinghouse Air Brake Company: *See—*
Hart, James E., 4,058,348, Cl. 303-35.000.

Westinghouse Electric Corporation: *See—*
Balbo, Anthony M., 4,058,191, Cl. 187-1.00R.
Barbieri, Thomas; and Getz, Edward J., 4,058,211, Cl. 206-422.000.
Benton, Ronald E., 4,058,842, Cl. 361-38.000.
Duncan, Charles; and Hopkins, Richard H., 4,058,429, Cl. 156-601.000.
Kennedy, Paul G., 4,058,835, Cl. 358-134.000.
Kosanovich, Nicholas S., 4,058,320, Cl. 277-3.000.
Mole, Cecil J.; and Edwards, Robert F., 4,058,746, Cl. 310-10.000.
Mullis, Clyde M., 4,058,186, Cl. 187-1.00R.

Westley, John, to Hoffmann-La Roche Inc. Therapeutic agents for improving cardiovascular function. 4,058,620, Cl. 424-283.000.

Weston, Martin: *See—*
Drewery, John Oliver; and Weston, Martin, 4,058,836, Cl. 358-167.000.

Wetherby, Edward M., to Graymills Inc. Mixing apparatus. 4,058,296, Cl. 366-160.000.

Whatman Reeve Angel Limited: *See—*
Head, Brian Arthur, 4,058,456, Cl. 210-23.00R.

Whirlow, Donald K.: *See—*
Kurz, Robert A.; and Whirlow, Donald K., 4,058,373, Cl. 55-16.000.

White, Donald M., to Atwood Vacuum Machine Company. Method of installing a water heater in a recreational vehicles. 4,057,892, Cl. 29-526.00R.

White, Leslie E.; and Gracey, Charles M., to Aerojet-General Corporation. Filter-lined container for hazardous solids. 4,058,479, Cl. 252-301.10W.

Whiteside, George D.: *See—*
Johnson, Bruce K.; Laskin, Irving; and Whiteside, George D., 4,058,817, Cl. 354-26.000.
Johnson, Bruce K.; and Whiteside, George D., 4,058,818, Cl. 354-33.000.

Wieder, Irwin, to Analytical Radiation Corporation. Method and apparatus for improved analytical fluorescent spectroscopy. 4,058,732, Cl. 250-461.00B.

Wiegard, Klaus, to Daimler-Benz Aktiengesellschaft. Bearing support of the heat-exchanger disk of regenerative heat-exchanger. 4,058,157, Cl. 165-8.000.

Wild, Kenneth, to Tootal Limited. Wet transfer printing process and apparatus. 4,057,864, Cl. 8-2.50R.

Wilder, Richard J.; and Wurfel, Ivan, to American Chain & Cable Company, Inc. Power and free conveyor system with spaced apart actuation and engagement means. 4,058,064, Cl. 104-172.00S.

Wilkes, Arthur L.; Wade, Fred B.; and Thompson, Robert L., to International Communication Sciences. Speech analysis and synthesis system. 4,058,676, Cl. 179-1.0SA.

Will, Fritz G., to General Electric Company. Rechargeable aqueous metal-halogen cell. 4,058,651, Cl. 429-105.000.

William H. Rorer, Inc.: *See—*
Douglas, George Henry; Studt, William Lyon; and Dodson, Stuart Alan, 4,058,557, Cl. 260-501.140.

Williams, Earl P.: *See—*
Fein, Marvin M.; Williams, Earl P.; and Field, Nathan D., 4,058,462, Cl. 210-289.000.

Williams, Glenn V., Jr., to Diamond International Corporation. Seal assembly for pressure or vacuum chambers. 4,058,435, Cl. 162-371.000.

Williams, John. Immuno-suppressive agents. 4,058,594, Cl. 424-37.000.

Williams, Melvin. Automatic sample processing apparatus. 4,058,252, Cl. 233-14.00R.

Willimzik, Bernhard Max, to GRANGES NYBY AB. Mandrel for cold drawing and/or sizing tubes. 4,057,992, Cl. 72-283.000.

Wills, Lynn D.: *See—*
Gauss, Robert C.; and Wills, Lynn D., 4,058,811, Cl. 343-715.000.

Wilson, Daniel F., to Midcon Pipeline Equipment Co. Pipe wrapping apparatus. 4,058,427, Cl. 156-392.000.

Wiltgen, Leroy: *See—*
Dietz, Frederick P., 4,058,132, Cl. 132-73.000.

Wiltgen, Rita: *See—*
Dietz, Frederick P., 4,058,132, Cl. 132-73.000.

Winn, Russell Edward, to A/S Jotungruppen. Submersible painting apparatus. 4,058,082, Cl. 118-9.000.

Wisconsin Alumni Research Foundation: *See—*
Nickles, Robert J., 4,058,728, Cl. 250-369.000.

Wise, Edward; and Wise, Mary G. Apparatus for offsetting wear in chain saw bar guide rails. 4,057,991, Cl. 72-211.000.

Wise, Mary G.: *See—*
Wise, Edward; and Wise, Mary G., 4,057,991, Cl. 72-211.000.

Wise, William C.: *See—*
Kramer, Francis J.; Rothfuss, Robert G.; and Wise, William C., 4,058,047, Cl. 85-11.000.

Wise, William D. Locking device. 4,057,948, Cl. 52-582.000.

Wissaert, Roland: *See—*
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Wittman, Gunther: *See—*
Bauer, Kurt; Wittman, Gunther; Mussgay, Manfred; Irion, Eckart; and Geilhausen, Horst, 4,058,599, Cl. 424-92.000.

Wittmann, Erwin: *See—*
Schonbeck, Rupert; Kloimstein, Engelbert; and Wittmann, Erwin, 4,058,390, Cl. 71-92.000.

Wittner, Milton, to Vonsimi Sales Corporation. Adaptor mounting for adjustable distributor contact breaker assembly module. 4,058,691, Cl. 200-31.00R.

Wolf, Frank K. Hoop and disc with sounders. 4,058,314, Cl. 273-106.00B.

Wolf, Franz-Josef. Coupling arrangement. 4,058,330, Cl. 285-174.000.

Wolfe, Robert Nolan: *See—*
Fitzgerald, William Joseph; Shelton, Glenmore Lorraine, Jr.; and Wolfe, Robert Nolan, 4,058,849, Cl. 364-520.000.

Wolgast, Raymond P.; and Lamanna, Joe, to Detroit Autobody Equipment, Inc. Automobile body pulling tool. 4,057,994, Cl. 72-441.000.

Wong, Henry: *See—*
Monkovic, Ivo; Bachand, Carol; and Wong, Henry, 4,058,531, Cl. 260-285.000.

Wong, Herman: *See—*
Kaspari, William J.; Wong, Herman; and Kirch, Joseph L., 4,058,117, Cl. 128-2.05A.

Wong, Yen Bak. Fishing lure retriever. 4,057,925, Cl. 43-17.200.

Wood, Charles A. Counterweight assembly. 4,058,025, Cl. 74-573.00R.

Wood, Peter, to Renold Limited. Leaf chain and to driving arrangements employing same. 4,058,021, Cl. 74-229.000.

Woodhouse, Charles F., to Approach Fish. Airport wind shear monitoring method and apparatus. 4,058,010, Cl. 73-189.000.

Woods, William C.; Levin, Robert E.; and Hodges, Richard H., to GTE Sylvania Incorporated. Dosimetry control method. 4,058,752, Cl. 315-360.000.

Work Horse Manufacturing Co.: *See—*
Van Mill, Michael D., 4,058,239, Cl. 222-462.000.

Worz, Helmut: *See—*
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Wray, Gary Q.: *See—*
Holden, John C.; and Wray, Gary Q., 4,058,165, Cl. 166-314.000.

Wright, John F.; and Cannan, Terrance M., to FMC Corporation. Treatment of seedlings. 4,058,067, Cl. 111-1.000.

Wroble, Arthur John: *See—*
Hobson, James Charles; and Wroble, Arthur John, 4,058,256, Cl. 239-101.000.

Wuntch, Thomas. Watch winder. 4,057,958, Cl. 58-82.00R.

Wurfel, Ivan: *See—*
Wilder, Richard J.; and Wurfel, Ivan, 4,058,064, Cl. 104-172.00S.

Wyatt, William Burk, Jr.; and Benefield, Bruce D., to Videre Corporation. Thermally insulated window system. 4,057,936, Cl. 49-61.000.

Wyatt, William Burk, Jr.; and Benefield, Bruce D., to Videre Corporation. Thermally insulated panel. 4,057,944, Cl. 52-309.110.

Wyslotsky, Ihor. Package for containing products. 4,058,212, Cl. 206-470.000.

Xerox Corporation: *See—*
Fletcher, Gerald M., 4,058,306, Cl. 271-80.000.
Fravel, John C.; Chang, Louis H.; and Yoshikawa, Harunori, 4,058,195, Cl. 197-18.000.
Halfhill, Martin O., 4,058,759, Cl. 322-13.000.
Jugle, Don B.; and Lipani, Anthony F., 4,058,086, Cl. 118-653.000.
Mammino, Joseph; and Jossel, Franklin, 4,058,397, Cl. 96-15.00D.
Sheikh, Sikander, 4,058,850, Cl. 364-900.000.
West, Donald P., 4,058,197, Cl. 197-151.000.

Yackel, John P.: *See—*
Sullivan, Peter; and Yackel, John P., 4,058,327, Cl. 281-33.000.

Yamada, Takashi: *See—*
Oishi, Kazuo; Yamada, Takashi; and Yoshida Shuzo, 4,058,796, Cl. 340-52.00F.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Sekiguchi, Tomoaki; Miyao, Hiroyasu; and Shimizu, Hidekazu, 4,058,797, Cl. 340-56.000.

Yamaji, Hiroyuki: *See—*
Shinohara, Shinitsu; Uchino, Hisanori; and Yamaji, Hiroyuki, 4,058,178, Cl. 177-146.000.

Yamamoto, Kimihiko: *See—*
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Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, 4,058,665, Cl. 560-121.000.

Yamatani, Wataru: *See—*
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Yamaura, Yoshotomo: *See—*
Komatsu, Atsushi; Miyazawa, Kuichiro; Yamaura, Yoshotomo; and Asanuma, Akira, 4,058,134, Cl. 137-38.000.

Yamazaki, Hironobu, to Tekken Kensetu Co. Ltd. Brush-type packing means for shield excavator. 4,057,971, Cl. 61-84.000.

Yamazaki, Hiroshi: *See—*
Mogi, Takao; Taki, Akira; and Yamazaki, Hiroshi, 4,058,772, Cl. 325-464.000.

Yamazaki, Masaru, to Copal Company Limited. Digital antilogarithmic converter circuit. 4,058,807, Cl. 340-347.0DA.

Yamschikova, Margarita Sergeevna: *See—*
Viktorov, Evgeny Vasilievich; Novikov, Igor Ivanovich; Kondratieva, Tatyana Fedorovna; Gubarev, Georgy Vasilievich; Yamschikova, Margarita Sergeevna; Vasiliev, Vasily Dmitrievich; Kontsevich, Georgy Mikhailovich; Gubinsky, Anatoly Sergeevich; Velikasov, Anatoly Alexeevich; Taradonov, Vladi-

mir Ignatievich; and Isakov, Valery Pavlovich, 4,058,138, Cl. 137-512.100.

Yanagisawa, Isao: *See*—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Shizaoki, Tetsuya; Tomioka, Kenichi; and Takagi, Tokuichi, 4,058,665, Cl. 560-121.000.

Yandell, James L. Selectively actuated vibrating apparatus connected with well bore member. 4,058,163, Cl. 166-177.000.

Yang, Teh-Tsao. Stamp pad. 4,058,085, Cl. 118-264.000.

Yazev, Vladimir Dmitrievich: *See*—
Muzhzhavlev, Konstantin Dmitrievich; Kosarev, Sergei Petrovich; Schegolev, Vladimir Ivanovich; Ivanov, Andrei Borisovich; Romanenko, Oleg Nikolaevich; Yazev, Vladimir Dmitrievich; and Vasiliev, Alexei Vasilievich, 4,058,448, Cl. 204-244.000.

Yen, Steven N.; and Osterholtz, Frederick D., to Union Carbide Corporation. Disposable absorbent articles containing particulate, free-flowing, insoluble swellable polymers. 4,058,124, Cl. 128-284.000.

Yonemitsu, Eiichi; Sugio, Akitoshi; Kuramoto, Atuo; and Urabe, Hiroyuki, to Mitsubishi Gas Chemical Company, Inc. Process for terminating polyphenylene ethers reactions with amino carboxylic acids and reducing agents. 4,058,504, Cl. 260-47.0ET.

Yonezu, Nobuya, to Minami Kogyo Kabushiki Kaisha. Automatic lumber feeding device in combination with a wood working machine. 4,058,151, Cl. 144-246.00E.

Yoshida Shuzo: *See*—
Oishi, Kazuo; Yamada, Takashi; and Yoshida Shuzo, 4,058,796, Cl. 340-52.00F.

Yoshikawa, Harunori: *See*—
Fravel, John C.; Chang, Louis H.; and Yoshikawa, Harunori, 4,058,195, Cl. 197-18.000.

Young, Chung Chang, to Owens-Illinois, Inc. Process for selectively measuring sodium ions in solution. 4,058,437, Cl. 204-1.00T.

Yukuta, Toshio; Ohashi, Takashi; Saito, Masumi; and Arai, Katsuhiko, to Bridgestone Tire Company Limited. Process for preparing organic solvent-soluble poly(amide-imide). 4,058,503, Cl. 260-47.0CP.

Zaboronok, Georgy Fomich: *See*—
Sokolov, Boris Grigorievich; and Zaboronok, Georgy Fomich, 4,058,697, Cl. 219-121.0EB.

Zahn, Heinrich, to Robert Bosch GmbH. Scanning device for helical type video tape recorder. 4,058,845, Cl. 360-107.000.

Zappia, Anthony T., to Ball Packaging Products, Inc. Apparatus for forming glassware with shifting invert and revert mechanism. 4,058,388, Cl. 65-229.000.

Zeier, Hans. Steam iron. 4,057,918, Cl. 38-77.300.

Zeitgeist AG.: *See*—
Bowmer, Geoffrey Malcolm, 4,057,882, Cl. 29-283.500.

Zenith Radio Corporation: *See*—
Blacker, Allen P.; and Schwartz, James W., 4,058,753, Cl. 315-368.000.
Thorne, Richard L., 4,058,756, Cl. 318-265.000.

Ziegler, Victor Herbert: *See*—
Rohrberg, Rod G.; Trentz, Henry Patrick; and Ziegler, Victor Herbert, 4,057,935, Cl. 49-56.000.

Zimmerman, Daniel: *See*—
Bierenbaum, Harvey S.; Penoyer, John A.; and Zimmerman, Daniel, 4,058,582, Cl. 264-154.000.

Zirino, Alberto; Clavell, Cesar; and Huey, Kent, to United States of America, Navy. Anodic stripping voltammetry system and combination electrode assembly therefore. 4,058,446, Cl. 204-195.00R.

Zoecon Corporation: *See*—
Henrick, Clive A.; and Labovitz, Jeffery N., 4,058,666, Cl. 560-126.000.

Zolke, Sarah; and Soto, William. Self-contained alarm lock. 4,057,986, Cl. 70-233.000.

Zoll, Paul M.: *See*—
Frank, Howard A.; and Zoll, Paul M., 4,058,128, Cl. 128-418.000.

Zsolnai, Tibor; Lugosi, Gyorgy; Szepesi, Istvan; Bakonyi, Maria; Racz, Istvan; and Radvany nee Hegedus, Erzsebet, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT. Method of treating fungus-infected plants with phenylazocyanoacetic ester derivatives. 4,058,608, Cl. 424-226.000.

Zuern, Ludwig: *See*—
Beck, Gilbert; Zuern, Ludwig; and Stahnecker, Erhard, 4,058,152, Cl. 152-310.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF NOVEMBER, 1977

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Axen, Rolf E. A. V.; Porath, Jerker O.; and Wide, Leif Edvin, to Pharmacia AB. Method for the determination of proteins and polypeptides. Re. 29,474, Cl. 424-1.000.

Clark & Vicario Corporation: *See*—
Kaiser, Robert G., Re. 29,472, Cl. 162-343.000.

DHP Corporation: *See*—
Fitzgerald, Walter P., Jr., Re. 29,473, Cl. 252-95.000.

Fitzgerald, Walter P., Jr., to DHP Corporation. Chemical composition. Re. 29,473, Cl. 252-95.000.

Giroux, Richard L., to Halliburton Company. Oil well testing apparatus. Re. 29,471, Cl. 166-334.000.

Halliburton Company: *See*—
Giroux, Richard L., Re. 29,471, Cl. 166-334.000.

Honeywell Inc.: *See*—
Jensen, James Lee, Re. 29,475, Cl. 322-28.000.

Jensen, James Lee, to Honeywell Inc. Battery charging circuit responsive to generator output voltage and current. Re. 29,475, Cl. 322-28.000.

Kaiser, Robert G., to Clark & Vicario Corporation. Conduit system for conveying fibrous stock from deaerator chamber to headbox in papermaking machine. Re. 29,472, Cl. 162-343.000.

Pharmacia AB: *See*—
Axen, Rolf E. A. V.; Porath, Jerker O.; and Wide, Leif Edvin, Re. 29,474, Cl. 424-1.000.

Porath, Jerker O.: *See*—
Axen, Rolf E. A. V.; Porath, Jerker O.; and Wide, Leif Edvin, Re. 29,474, Cl. 424-1.000.

Wide, Leif Edvin: *See*—
Axen, Rolf E. A. V.; Porath, Jerker O.; and Wide, Leif Edvin, Re. 29,474, Cl. 424-1.000.

LIST OF PLANT PATENTEES

Cordy, Clifford B., to Naumes of Oregon, Inc. Pear tree. 4,148, 11-15-77, Cl. 36.000.

E. G. Hill Co., Inc.: *See*—
Jelly, Robert G., 4,151, Cl. 20.000.
Jelly, Robert G., 4,152, Cl. 14.000.

Jelly, Robert G., to E. G. Hill Co., Inc. Rose plant seedling. 4,151, 11-15-77, Cl. 20.000.

Jelly, Robert G., to E. G. Hill Co., Inc. White rose plant seedling. 4,152, 11-15-77, Cl. 14.000.

L. E. Cooke Co.: *See*—
Moore, Ralph S., 4,150, Cl. 37.000.

Moore, Ralph S., to L. E. Cooke Co. Cherry tree. 4,150, 11-15-77, Cl. 37.000.

Naumes of Oregon, Inc.: *See*—
Cordy, Clifford B., 4,148, Cl. 36.000.

Schmidt, J. Frank, III. Oak tree. 4,149, 11-15-77, Cl. 51.000.

LIST OF DESIGN PATENTEES

Aktiebolaget Robacks Mekaniska: *See*—
Bostrom, Sture, 246,383, Cl. D25-3.000.

American Sign and Advertising Services, Inc.: *See*—
Niehaus, Donald H.; Schwab, Nick J.; and Seggerson, Patrick J., 246,400, Cl. D96-12.00J.

Amsco/Medical Electronics, Inc.: *See*—
Dykstra, Jerald P., 246,352, Cl. D10-60.000.

Barlow, Robert; Cesare, Frank; and Miceli, Carmen, to Cesare, Frank J. Portable prefabricated restaurant building. 246,381, 11-15-77, Cl. D25-10.000.

Barnich, Richard G.; and Johnson, Gary D., to Process Computer Systems, Inc. Desk top computer. 246,368, 11-15-77, Cl. D14-40.000.

Benner, David A.: *See*—
Crandell, Melvin G.; Reeves, Richard E.; Schachner, Leonard; and Benner, David A., 246,373, Cl. D16-32.000.

Bogan, Robert T. Grille and the like. 246,385, 11-15-77, Cl. D25-47.000.

Boothby, Alfons Th. Device for pipetting of liquids. 246,380, 11-15-77, Cl. D24-55.000.

Booty, Donald J., to Keystone Lamp Mfg. Corporation. Collapsible lamp shade. 246,397, 11-15-77, Cl. D48-16.00R.

Bostrom, Sture, to Aktiebolaget Robacks Mekaniska. Concrete station. 246,383, 11-15-77, Cl. D25-3.000.

Boughton, Stephen G., to Samsonite Corporation. Table. 246,341, 11-15-77, Cl. D6-146.000.

Boyertown Auto Body Works: *See*—
Hafer, Paul R., 246,360, Cl. D12-99.000.

Britt, William James, to Morton-Norwich Products, Inc. Bottle. 246,347, 11-15-77, Cl. D9-42.000.

Brosk, Doris. Dress. 246,336, 11-15-77, Cl. D2-146.000.

Brown, Brian E.; and Hall, Alfred G., to Moduloc Concrete Products (London) Ltd. Pre-cast concrete unit for manholes. 246,384, 11-15-77, Cl. D25-36.000.

Candiliotis, Gerassimos C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 246,361, 11-15-77, Cl. D12-146.000.

Candiliotis, Gerassimos C. Pneumatic tire tread and buttress. 246,364, 11-15-77, Cl. D12-151.000.

Cartier, Inc.: *See*—
Durante, Alfred Joseph, 246,354, Cl. D11-36.000.
Durante, Alfred Joseph, 246,355, Cl. D11-44.000.
Durante, Alfred Joseph, 246,357, Cl. D11-40.000.

Cesare, Frank: *See*—
Barlow, Robert; Cesare, Frank; and Miceli, Carmen, 246,381, Cl. D25-10.000.

Cesare, Frank J.: *See*—
Barlow, Robert; Cesare, Frank; and Miceli, Carmen, 246,381, Cl. D25-10.000.

Crandell, Melvin G.; Reeves, Richard E.; Schachner, Leonard; and Benner, David A., to Xerox Corporation. Paper overfeed tray. 246,373, 11-15-77, Cl. D16-32.000.

Ditto, Donald R. Sunburst wall plaque. 246,358, 11-15-77, Cl. D11-137.000.

Doughtie's Foods, Inc.: *See*—
Klupt, Carle D., 246,349, Cl. D9-197.000.

Durante, Alfred Joseph, to Cartier, Inc. Wire and diamond ring. 246,354, 11-15-77, Cl. D11-36.000.

Durante, Alfred Joseph, to Cartier, Inc. Diamond pendant. 246,355, 11-15-77, Cl. D11-44.000.

Durante, Alfred Joseph, to Cartier, Inc. Earring. 246,357, 11-15-77, Cl. D11-40.000.

Dykstra, Jerald P., to Amsco/Medical Electronics, Inc. Probe cover. 246,352, 11-15-77, Cl. D10-60.000.

Einhorn, W. Lee. Combined display and packaging container. 246,348, 11-15-77, Cl. D9-195.000.

Elkaim, Henri. Combined neck chain and pendants. 246,353, 11-15-77, Cl. D11-8.000.

Endres, Michael H. Combined pipe tamper and scraper. 246,390, 11-15-77, Cl. D27-51.000.

Floyd, Gary W. Pickup truck camper unit. 246,365, 11-15-77, Cl. D12-156.000.

Fox, Douglas A. Pendant doll. 246,356, 11-15-77, Cl. D11-44.000.

Frank, Arlene. Combined paddle and ball holder. 246,340, 11-15-77, Cl. D6-131.000.

Georgia-Pacific Corporation: *See*—
Jespersen, Paul W., 246,338, Cl. D6-95.000.
Graham, Roger. Smoking device. 246,389, 11-15-77, Cl. D27-3.000.
Gross, Alan E.: *See*—
Lefkow, Robert A.; and Gross, Alan E., 246,391, Cl. D27-3.000.
Hafer, Paul R., to Boyertown Auto Body Works. Van body. 246,360, 11-15-77, Cl. D12-99.000.
Hall, Alfred G.: *See*—
Brown, Brian E.; and Hall, Alfred G., 246,384, Cl. D25-36.000.
Hardin, Edward L. Concrete block. 246,386, 11-15-77, Cl. D25-97.000.
Harris, Edward H. Lighting panel. 246,399, 11-15-77, Cl. D48-23.00R.
Hellqvist, Ake Oskar Vilhelm. Sewage tank. 246,375, 11-15-77, Cl. D23-2.000.
Jespersen, Paul W., to Georgia-Pacific Corporation. Dispenser for liquids. 246,338, 11-15-77, Cl. D6-95.000.
Johnson, Gary D.: *See*—
Barnich, Richard G.; and Johnson, Gary D., 246,368, Cl. D14-40.000.
Keystone Lamp Mfg. Corporation: *See*—
Booty, Donald J., 246,397, Cl. D48-16.00R.
Klupt, Carle D., to Doughtie's Foods, Inc. Food carton. 246,349, 11-15-77, Cl. D9-197.000.
Lefkow, Robert A.; and Gross, Alan E. Water cooled smoking device. 246,391, 11-15-77, Cl. D27-3.000.
Levin, Gus. Combined utility and book holder supporting tray, hold open brace and patient restraint to be removably mounted on the armrests of collapsible wheelchairs. 246,362, 11-15-77, Cl. D12-133.000.
Lorenz, Leo J., to Massey-Ferguson Inc. Tractor hood. 246,370, 11-15-77, Cl. D15-31.000.
Massey-Ferguson Inc.: *See*—
Lorenz, Leo J., 246,370, Cl. D15-31.000.
McGrath, James L., to UTM Power Products, Inc. Clamp-type electrical connector. 246,366, 11-15-77, Cl. D13-24.000.
Miceli, Carmen: *See*—
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Moduloc Concrete Products (London) Ltd.: *See*—
Brown, Brian E.; and Hall, Alfred G., 246,384, Cl. D25-36.000.
Morabito, Frank. Dough box. 246,343, 11-15-77, Cl. D7-21.000.
Morton-Norwich Products, Inc.: *See*—
Britt, William James, 246,347, Cl. D9-42.000.
Mueller, Walter. Air conditioner cover. 246,378, 11-15-77, Cl. D23-141.000.
Mueller, Walter. Air conditioner cover. 246,379, 11-15-77, Cl. D23-141.000.
Niarhos, Stephen. Sandal. 246,337, 11-15-77, Cl. D2-293.000.
Niehaus, Donald H.; Schwab, Nick J.; and Seggerson, Patrick J., to American Sign and Advertising Services, Inc. Combined clock and sign. 246,400, 11-15-77, Cl. D96-12.00J.
Nishiguchi, Seiichiro: *See*—
Yoshida, Yoshisaburo; and Nishiguchi, Seiichiro, 246,351, Cl. D10-15.000.
O'Brien, Catherine H., administratrix/executrix: *See*—
O'Brien, Gerard J., deceased; and O'Brien, Catherine H., administratrix/executrix, 246,369, Cl. D14-92.000.
O'Brien, Gerard J., decease'l; and by O'Brien, Catherine H., administratrix/executrix. Tap transducer intercom. 246,369, 11-15-77, Cl. D14-92.000.
Pall Corporation: *See*—
Pall, David B., 246,376, Cl. D23-4.000.
Pall, David B., to Pall Corporation. Filter. 246,376, 11-15-77, Cl. D23-4.000.
Pansini, Andrew L. Liquid applicator. 246,371, 11-15-77, Cl. D15-56.000.
Pansini, Andrew L. Flow control valve. 246,377, 11-15-77, Cl. D23-19.000.
Parker, John Castlereagh, III. Bedpan. 246,382, 11-15-77, Cl. D24-57.000.
Poncia, Marcia E. Implement to tuck blanket in waterbeds. 246,345, 11-15-77, Cl. D7-181.000.
Poque, Dionysius J., to Uniroyal Aktiengesellschaft. Pneumatic tire tread and buttress. 246,363, 11-15-77, Cl. D12-146.000.
Powell Pressed Steel Company, The: *See*—
Powell, William R., 246,350, Cl. D9-246.000.
Powell, William R., to Powell Pressed Steel Company, The. Material handling box. 246,350, 11-15-77, Cl. D9-246.000.
Powers, Harvey B.; and Powers, Joan H. Cart for fishing equipment. 246,359, 11-15-77, Cl. D12-29.000.
Powers, Joan H.: *See*—
Powers, Harvey B.; and Powers, Joan H., 246,359, Cl. D12-29.000.
Process Computer Systems, Inc.: *See*—
Barnich, Richard G.; and Johnson, Gary D., 246,368, Cl. D14-40.000.
Ratcliff, Dorothy L.; and Ratcliff, Ford, Jr. Educational aid. 246,374, 11-15-77, Cl. D19-64.000.
Ratcliff, Ford, Jr.: *See*—
Ratcliff, Dorothy L.; and Ratcliff, Ford, Jr., 246,374, Cl. D19-64.000.
Raulson, Michael Jay. Support for hanukkah lights. 246,398, 11-15-77, Cl. D48-20.00C.
Reeves, Richard E.: *See*—
Crandell, Melvin G.; Reeves, Richard E.; Schachner, Leonard; and Benner, David A., 246,373, Cl. D16-32.000.
Rubbermaid Commercial Products Inc.: *See*—
Yonkers, Ronald C., 246,342, Cl. D7-1.000.
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Saito, Shigeru. Figure toy. 246,394, 11-15-77, Cl. D34-15.00B.
Saito, Shigeru. Figure toy. 246,395, 11-15-77, Cl. D34-15.00B.
Saito, Shigeru. Figure toy. 246,396, 11-15-77, Cl. D34-15.00B.
Samsonite Corporation: *See*—
Boughton, Stephen G., 246,341, Cl. D6-146.000.
Satten, Michael I. Toy house. 246,393, 11-15-77, Cl. D34-15.0LL.
Schachner, Leonard: *See*—
Crandell, Melvin G.; Reeves, Richard E.; Schachner, Leonard; and Benner, David A., 246,373, Cl. D16-32.000.
Schankler, Martin M., to Microfilm Enterprises Corporation. Film reel spacer. 246,367, 11-15-77, Cl. D14-11.000.
Schuss, Phillip. Ceiling tile. 246,387, 11-15-77, Cl. D25-80.000.
Schwab, Nick J.: *See*—
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Sharp Kabushiki Kaisha: *See*—
Yoshida, Yoshisaburo; and Nishiguchi, Seiichiro, 246,351, Cl. D10-15.000.
Shivvers, Charles C. Perforated plank for the floor of a material drying bin. 246,388, 11-15-77, Cl. D25-91.000.
Smith, Duaine E. Cat litter box. 246,392, 11-15-77, Cl. D30-99.000.
Strunk, Fred E. Shim for motor or the like. 246,346, 11-15-77, Cl. D8-354.000.
Tucker, Gideon S. Tissue dispensing apparatus. 246,339, 11-15-77, Cl. D6-96.000.
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Yonkers, Ronald C., to Rubbermaid Commercial Products Inc. Food service pan. 246,342, 11-15-77, Cl. D7-1.000.
Yonkers, Ronald C., to Rubbermaid Commercial Products Inc. Food service pan lid. 246,344, 11-15-77, Cl. D7-131.000.
Yoshida, Yoshisaburo; and Nishiguchi, Seiichiro, to Sharp Kabushiki Kaisha. Digital clock. 246,351, 11-15-77, Cl. D10-15.000.
Yoshino, Zenzaburo. Grip for a photographic camera. 246,372, 11-15-77, Cl. D16-10.000.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 15, 1977

NOTE.—First number, class; second number, subclass; third number, patent number

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141 A	4,058,007
144	4,058,008
146.8	4,058,009
189	4,058,010
194 R	4,058,011
228	4,058,012
352	4,058,013
358	4,058,014
395	4,058,015
419	4,058,016
423 R	4,058,017
609	4,058,003
620	4,058,001
	4,058,002
644	4,058,000

CLASS 74

18.2	4,058,018
87	4,058,019
217 B	4,058,020
229	4,058,021
231 MB	4,058,022
243 DR	4,058,023
572	4,058,024
573 R	4,058,025
577 R	4,058,026
711	4,058,027
865	4,058,028
	4,058,029

CLASS 75

1 T	4,058,393
61	4,058,394
72	4,058,395
77	4,058,396

CLASS 81

53 R	4,058,030
64	4,058,031
125	4,058,032

CLASS 82

2 R	4,058,033
	4,058,034
3	4,058,035
38 A	4,058,036

CLASS 83

70	4,058,037
109	4,058,038
155	4,058,039
177	4,058,040
305	4,058,041

CLASS 84

1.01	4,058,042
1.03	4,058,043
1.14	4,058,044
	4,058,045
384	4,058,046

CLASS 85

11	4,058,047
31	4,058,048

CLASS 87

8	4,058,049

CLASS 89

14 C	4,058,050

CLASS 93

88	4,058,051

CLASS 96

15 D	4,058,397
27 R	4,058,398
75	4,058,399
86 P	4,058,400
115 R	4,058,401

CLASS 99

646 R	4,058,052

CLASS 100

26	4,058,053
233	4,058,054

CLASS 101

10	4,058,055
93.19	4,058,056
148	4,058,057
365	4,058,058
425	4,058,059

CLASS 102

8	4,058,060
	4,058,061
38	4,058,062
56 SC	4,058,063

CLASS 104

172 S	4,058,064

CLASS 105

180	4,058,065

CLASS 106

16	4,058,402
56	4,058,403
73.31	4,058,404
87	4,058,405
90	4,058,406
92	4,058,407
176	4,058,408
271	4,058,409

CLASS 108

9	4,058,066

CLASS 110

8 F	4,058,069

CLASS 111

1	4,058,067
36	4,058,068

CLASS 112

153	4,058,070
235	4,058,071
258	4,058,072
	4,058,073

CLASS 114

210	4,058,074
222	4,058,075
281	4,058,076
283	4,058,077
303	4,058,078

CLASS 116

114 H	4,058,079
115.5	4,058,080
125	4,058,081

CLASS 118

9	4,058,082
16	4,058,083
264	4,058,085
653	4,058,086

CLASS 122

235 R	4,058,087

CLASS 123

18 R	4,058,088
32 ED	4,058,089
32 SP	4,058,090
32 ST	4,058,092
32 VN	4,058,091
75 B	4,058,093
102	4,058,094
117 R	4,058,095
119 A	4,058,098
119 CG	4,058,096
119 F	4,058,097
122 D	4,058,099
139 AW	4,058,100
140 MP	4,058,101
141	4,058,102
148 E	4,058,103
193 CP	4,058,104
198 DB	4,058,106
198 DC	4,058,105

CLASS 126

121	4,058,107
137	4,058,108
270	4,058,109
271	4,058,110
	4,058,111

CLASS 127

5	4,058,410
37	4,058,411

CLASS 128

1 R	4,058,112
2 N	4,058,113
2 S	4,058,115
2 V	4,058,114
2.05 A	4,058,117
2.05 T	4,058,118
2.1 E	4,058,116
80 R	4,058,119
188	4,058,120
221	4,058,121
260	4,058,122
278	4,058,123
284	4,058,124
287	4,058,125
305	4,058,126
417	4,058,127
418	4,058,128

CLASS 131

140 C	4,058,129
192	4,058,130

CLASS 132

7	4,058,131
73	4,058,132
112	4,057,901

CLASS 134

24	4,058,412

CLASS 135

4 A	4,058,133

CLASS 137

38	4,058,134
106	4,058,135
110	4,058,136
236 S	4,058,137
512.1	4,058,138
596.13	4,058,139
	4,058,140

CLASS 138

39	4,058,141
89	4,058,142

CLASS 139

110	4,058,143
384 B	4,058,144
	4,058,145

CLASS 141

1	4,058,146
45	4,058,147
198	4,058,148
301	4,058,149

CLASS 144

1 R	4,058,150
246 E	4,058,151

CLASS 148

1.5	4,058,413
12 F	4,058,414
32	4,058,415
	4,058,416
37	4,058,417
175	4,058,418
	4,058,419

CLASS 149

2	4,058,420

CLASS 152

310	4,058,152

CLASS 156

73.5	4,058,421
96	4,058,422
98	4,058,423
137	4,058,424
200	4,058,425
212	4,058,426
392	4,058,427
429	4,058,428
601	4,058,429
611	4,058,430
627	4,058,431
659	4,058,432

CLASS 162

16	4,058,433
165	4,058,434
343	Re.29,472
371	4,058,435

CLASS 164

58	4,058,153
82	4,058,154
152	4,058,155
405	4,058,156

CLASS 165

8	4,058,157
9	4,058,158
105	4,058,159

158 4,058,160
4,058,161

CLASS 166

124 4,058,162
177 4,058,163
303 4,058,164
314 4,058,165
315 4,058,166
334 Re.29,471

CLASS 169

61 4,058,167

CLASS 172

59 4,058,168
191 4,058,169
311 4,058,170
4,058,172
713 4,058,171
719 4,058,173
781 4,058,174

CLASS 173

1 4,058,175

CLASS 174

34 4,058,669
38 4,058,670
151 4,058,671

CLASS 175

61 4,058,176
374 4,058,177

CLASS 176

78 4,058,436

CLASS 177

146 4,058,178
156 4,058,179

CLASS 178

3 4,058,672
22 4,058,673

CLASS 179

1 G 4,058,675
1 SA 4,058,676
1.5 FS 4,058,677
2.5 R 4,058,678
6 R 4,058,679
7.1 R 4,058,680
15 AF 4,058,682
4,058,683
15 AL 4,058,681
18 AH 4,058,685
18 BB 4,058,684
90 AT 4,058,686
100.11 4,058,687
156 R 4,058,688
157 4,058,689
167 4,058,690

CLASS 180

14 R 4,058,180
32 4,058,181
68.5 4,058,182
89.1 4,058,183

CLASS 182

128 4,058,184

CLASS 184

1 D 4,058,185

CLASS 187

1 R 4,058,186
4,058,191
29 R 4,058,187

CLASS 188

1 C 4,058,188
71.8 4,058,084
77 R 4,058,189
218 XL 4,058,190

CLASS 192

46 4,058,192
109 F 4,058,193

CLASS 194

4 C 4,058,194

CLASS 197

18 4,058,195
133 R 4,058,196
151 4,058,197

CLASS 198

313 4,058,198
370 4,058,199
382 4,058,200
4,058,201
482 4,058,202
509 4,058,203
833 4,058,204

CLASS 200

31 A 4,058,692
31 R 4,058,691
67 F 4,058,693
84 C 4,058,694
153 V 4,058,695

CLASS 202

86 4,058,205

CLASS 204

1 T 4,058,437
4,058,438
49 4,058,439
101 4,058,440
103 4,058,441
159.12 4,058,442
159.17 4,058,443
181 4,058,444
192 SP 4,058,445
195 P 4,058,447
195 R 4,058,446
244 4,058,448

CLASS 206

44 R 4,058,206
45.34 4,058,207
109 4,058,208
350 4,058,209
372 4,058,210
422 4,058,211
470 4,058,212
524.4 4,058,213
545 4,058,214
574 4,058,215
597 4,058,216

CLASS 208

59 4,058,449
66 4,058,450
97 4,058,451
134 4,058,452
188 4,058,453
321 4,058,454

CLASS 209

74 M 4,058,217
80.5 4,058,218
81 R 4,058,219
139 R 4,058,455

CLASS 210

23 R 4,058,456
32 4,058,457
52 4,058,458
132 4,058,459
198 C 4,058,460
242 S 4,058,461
289 4,058,462
317 4,058,463
356 4,058,464
4,058,465

CLASS 211

57.1 4,058,220
87 4,058,221
118 4,058,222

CLASS 214

1 BB 4,058,223
1 CM 4,058,224
6 P 4,058,225
7 4,058,226
13 4,058,227
18.2 4,058,230
77 R 4,058,228
4,058,229
516 4,058,231

CLASS 215

217 4,058,232

CLASS 219

10.77 4,058,696
121 EB 4,058,697
121 LM 4,058,699
121 P 4,058,698
137 R 4,058,700
270 4,058,701
321 4,058,702
492 4,058,703
528 4,058,704

CLASS 220

19 4,058,233
239 4,058,234

CLASS 221

48 4,058,235
163 4,058,236

CLASS 222

78 4,058,237
305 4,058,238
368 4,058,240
462 4,058,239

CLASS 223

98 4,058,241

CLASS 224

5 V 4,058,242
42.1 H 4,058,243

CLASS 226

97 4,058,244
174 4,058,245

CLASS 228

121 4,058,246

CLASS 229

2.5 R 4,058,247
30 4,058,248
34 HW 4,058,249
52 B 4,058,250
72 4,058,251

CLASS 233

14 R 4,058,252

CLASS 235

92 CC 4,058,708
448 4,058,707
449 4,058,705
4,058,706

CLASS 236

46 R 4,058,253
68 B 4,058,254

CLASS 237

12.3 B 4,058,255

CLASS 239

101 4,058,256
107 4,058,257
165 4,058,258
276 4,058,259
394 4,058,260
542 4,058,261
545 4,058,262
551 4,058,263

CLASS 242

7.22 4,058,278
18 PW 4,058,264
47.01 4,058,265
54 R 4,058,266
56 A 4,058,267
72 R 4,058,268
84.1 K 4,058,269
105 4,058,270
107.4 B 4,058,271
4,058,272
115 4,058,273

CLASS 243

5 4,058,274

CLASS 244

3.15 4,058,275
17.17 4,058,277
152 4,058,276

CLASS 246

169 R 4,058,279

CLASS 248

2 4,058,280
362 4,058,281
418 4,058,282
441 D 4,058,283

CLASS 249

163 4,058,284
216 4,058,285

CLASS 250

213 VT 4,058,721
225 4,058,722
235 4,058,723
309 4,058,724
343 4,058,725
353 4,058,726
363 R 4,058,727
369 4,058,728
370 4,058,729
397 4,058,730
442 4,058,731
461 B 4,058,732
476 4,058,733
493 4,058,486
495 4,058,734
551 4,058,735
573 4,058,736
4,058,737

CLASS 251

15 4,058,286
46 4,058,287
229 4,058,288
304 4,058,289
306 4,058,290

CLASS 252

8.1 4,058,466
8.55 D 4,058,467
46.7 4,058,468
51.5 R 4,058,469
62.1 L 4,058,470
63.5 4,058,471
89 B 4,058,472
95 Re.29,473
121 4,058,473
160 4,058,474
299 4,058,475
4,058,476
4,058,477
4,058,478
301.1 W 4,058,479
301.21 4,058,480
321 4,058,481
425.3 4,058,482
446 4,058,483
455 Z 4,058,484
466 PT 4,058,485
542 4,058,488
547 4,058,489
552 4,058,487
554 4,058,490

CLASS 254

74 4,058,291
88 4,058,292
89 H 4,058,293
167 4,058,294
184 4,058,295

CLASS 260

2.2 R 4,058,491
2.5 AH 4,058,493
4,058,494
2.5 AM 4,058,492
17 A 4,058,495
21 4,058,496
22 A 4,058,497
29.4 R 4,058,498
29.6 RW 4,058,499
42.24 4,058,500
45.75 B 4,058,501
45.75 S 4,058,543
45.85 B 4,058,502
47 CP 4,058,503
4,058,505
47 ET 4,058,504
75 M 4,058,507
75 NP 4,058,506
77.5 BB 4,058,508
79.7 4,058,509
112 B 4,058,511
112 R 4,058,510
112.5 LH 4,058,513
112.5 R 4,058,512
145 B 4,058,514
151 4,058,515
152 4,058,516
155 4,058,517
156 4,058,518
239 B 4,058,520
239.1 4,058,521
239.57 4,058,522
251 A 4,058,529
251 R 4,058,527
4,058,528
281 GN 4,058,530
285 4,058,531
288 R 4,058,532
294.8 F 4,058,533
295.5 S 4,058,534
326 E 4,058,535
340.7 4,058,536
346.3 4,058,537
397.2 4,058,538
397.45 4,058,539
405 4,058,540
4,058,541
429 R 4,058,542
429.7 4,058,544
4,058,545
448.8 R 4,058,546
465.1 4,058,548
465.3 4,058,547
465.4 4,058,549
501.14 4,058,557
515 A 4,058,558
520 C 4,058,559
535 P 4,058,560
544 C 4,058,561
556 AR 4,058,562
566 F 4,058,563
586 AB 4,058,565
586 R 4,058,564
600 R 4,058,566
607 A 4,058,567
607 AR 4,058,568
617 A 4,058,569
620 4,058,570
631 H 4,058,571
631.5 4,058,572
653.1 T 4,058,573
659 A 4,058,574
666 P 4,058,575
673 4,058,576
680 D 4,058,577
884 4,058,578

CLASS 264

81 4,058,579
113 4,058,580
136 4,058,581
154 4,058,582
176 R 4,058,583
250 4,058,584

CLASS 266

48 4,058,299
273 4,058,300

CLASS 267

124 4,058,301

CLASS 269

76 4,058,302
315 4,058,303

CLASS 270

79 4,058,304

CLASS 271

16 4,058,305
80 4,058,306
85 4,058,307
178 4,058,308

CLASS 273

43 D 4,058,309
63 E 4,058,310
73 G 4,058,311
77 A 4,058,312
87.4 4,058,313
106 B 4,058,314
118 R 4,058,315
121 A 4,058,316
130 R 4,058,317
134 AD 4,058,318
4,058,319

CLASS 277

3 4,058,320
81 P 4,058,321
96.1 4,058,322

CLASS 280

11.1 R 4,058,323
11.22 4,058,324
43.18 4,058,325
617 4,058,326

CLASS 281

33 4,058,327

CLASS 285

45 4,058,328
162 4,058,329
174 4,058,330

CLASS 292

97 4,058,331
147 4,058,332
172 4,058,333
241 4,058,334
251.5 4,058,335

CLASS 294

19 A 4,058,336
19 R 4,058,337
31.2 4,058,338
91 4,058,339

CLASS 296

97 G 4,058,340

CLASS 297

39 4,058,341
250 4,058,342

CLASS 298

9 4,058,343

CLASS 301

7 4,058,344

CLASS 303

6 M 4,058,345
22 R 4,058,346
4,058,347
35 4,058,348
69 4,058,349

CLASS 305

54 4,058,350
4,058,351
57 4,058,352

CLASS 307

66 4,058,738
88.3 4,058,739
116 4,058,740
252 G 4,058,741
260 4,058,742
275 4,058,743

CLASS 308

1 A 4,058,353

CLASS 310

10 4,058,746
52 4,058,747
343 4,058,744
366 4,058,745

CLASS 312

45 4,058,354
241 4,058,355
305 4,058,356

CLASS 313

156 4,058,748
326 4,058,749
500 4,058,750

CLASS 315

200 A 4,058,751
360 4,058,752
368 4,058,753
411 4,058,754

CLASS 318

47 4,058,755
265 4,058,756
474 4,058,757

CLASS 322

13 4,058,759
28 Re.29,475

CLASS 323

19 4,058,760
48 4,058,761

CLASS 324

51 4,058,764
61 R 4,058,765
4,058,766
73 R 4,058,767
142 4,058,768
205 4,058,763
216 4,058,762

CLASS 325

144 4,058,769
308 4,058,770
446 4,058,771
464 4,058,772

CLASS 328

37 4,058,773

CLASS 330

4.3 4,058,774
267 4,058,775
299 4,058,776

CLASS 331

57 4,058,777
94.5 G 4,058,778
108 R 4,058,779

CLASS 333

1.1 4,058,780

CLASS 335

186 4,058,781
219 4,058,782
276 4,058,783

CLASS 337

164 4,058,784
204 4,058,785
293 4,058,786

CLASS 338

22 R 4,058,787
42 4,058,788
322 4,058,789

CLASS 339

12 R 4,058,357
44 M 4,058,358

CLASS 340

15.5 MC 4,058,791
15.5 TS 4,058,790
29 4,058,792
52 D 4,058,793
52 F 4,058,796
56 4,058,797
92 4,058,794
146.3 WD 4,058,795
174 TF 4,058,799
224 4,058,802
237.5 4,058,803
248 A 4,058,804
347 AD 4,058,806
4,058,808
347 DA 4,058,805
4,058,807

CLASS 343

7 A 4,058,809

17.1 R 4,058,810
715 4,058,811
761 4,058,812
786 4,058,813

CLASS 346

154 4,058,814

CLASS 354

23 D 4,058,816
26 4,058,817
33 4,058,818
44 4,058,819
80 4,058,820
354 4,058,823

CLASS 355

14 4,058,815
109 4,058,359

CLASS 357

15 4,058,824
19 4,058,821
23 4,058,822
46 4,058,825

CLASS 358

10 4,058,826
55 4,058,827
80 4,058,828
84 4,058,829
86 4,058,830
87 4,058,831
110 4,058,832
111 4,058,833
128 4,058,834
134 4,058,835
167 4,058,836
237 4,058,837
257 4,058,838
260 4,058,674

CLASS 360

2 4,058,839
10 4,058,840
27 4,058,841
103 4,058,843
106 4,058,844
107 4,058,845
121 4,058,846
132 4,058,847

CLASS 361

38 4,058,842
128 4,058,848

CLASS 362

82 4,058,720
190 4,058,719
235 4,058,718

CLASS 363

80 4,058,758

CLASS 364

101 4,058,711
424 4,058,709
433 4,058,710
520 4,058,849
564 4,058,712
724 4,058,713
726 4,058,715
754 4,058,714
824 4,058,716
4,058,717
900 4,058,798
4,058,850
4,058,851

CLASS 365

3 4,058,800
39 4,058,801

CLASS 366

76 4,058,298
81 4,058,297
160 4,058,296

CLASS 407

89 4,057,884

CLASS 416

140 4,058,360

CLASS 417

312 4,058,361

CLASS 423

24 4,058,585
118 4,058,586
220 4,058,587
283 4,058,588
359 4,058,589
449 4,058,590
574 R 4,058,591
594 4,058,592

CLASS 424

1 Re.29,474
37 4,058,594
50 4,058,595
4,058,596
68 4,058,597
89 4,058,598
92 4,058,599
128 4,058,600
180 4,058,519
4,058,601
4,058,602
200 4,058,603
211 4,058,604
212 4,058,605
217 4,058,606
219 4,058,607
226 4,058,608
246 4,058,609
4,058,610
250 4,058,611
251 4,058,612
258 4,058,613
263 4,058,614
265 4,058,615
267 4,058,616
270 4,058,617
273 R 4,058,618
275 4,058,619
283 4,058,620
295 4,058,621
308 4,058,622
317 4,058,623
325 4,058,625
330 4,058,624
4,058,642
333 4,058,626
341 4,058,627
343 4,058,628
365 4,058,629

CLASS 426

36 4,058,630
52 4,058,631
126 4,058,632
315 4,058,633
456 4,058,634
509 4,058,635
573 4,058,636

CLASS 427

15 4,058,637
39 4,058,638
67 4,058,639
118 4,058,640
137 4,058,641

CLASS 428

198 4,058,643
200 4,058,644
331 4,058,645
425 4,058,646
474 4,058,647
511 4,058,648
518 4,058,649
683 4,058,650

CLASS 429

105 4,058,651

CLASS 526

68 4,058,652
159 4,058,653
4,058,654
212 4,058,655
215 4,058,656
261 4,058,658
263 4,058,657

CLASS 536

27 4,058,659

CLASS 544

18 4,058,660
21 4,058,661
136 4,058,524
165 4,058,523
182 4,058,525
4,058,526
208 4,058,662

CLASS 560

3 4,058,663
43 4,058,550
4,058,551
52 4,058,552
121 4,058,664
4,058,665
126 4,058,666
180 4,058,553
4,058,554
191 4,058,555
231 4,058,556

CLASSIFICATION OF DESIGNS

D2— 146 246,336
293 246,337
D6— 95 246,338
96 246,339
131 246,340
146 246,341
D7— 1 246,342
21 246,343
131 246,344
181 246,345
D8— 354 246,346
D9— 42 246,347
195 246,348
197 246,349
246 246,350
D10— 15 246,351
60 246,352
D11— 8 246,353
36 246,354
40 246,357
44 246,355
246,356
137 246,358
D12— 29 246,359
99 246,360
133 246,362
146 246,361
246,363
151 246,364
156 246,365
D13— 24 246,366
D14— 11 246,367
40 246,368
92 246,369
D15— 31 246,370
56 246,371
D16— 10 246,372
32 246,373
D19— 64 246,374
D23— 2 246,375
4 246,376
19 246,377
141 246,378
246,379
D24— 55 246,380
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